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ABSTRACT

This book consists of 14 selected papers that focus on the broad topic of educational planning. All the papers were originally presented at the Twelfth Annual Conference of the Australian College of Education, which was held in May 1971. Titles of the papers include "People, Policies and Planning," "Planning for Effective Education: A Matter of Faith or Despair?" "Education for Administration," "Helping the Teacher through System Administration," "The School and Its Locality When Planning for Effective Education," "Creating Classroom Climate by Influencing Norms: An Approach to Educational Planning," "Planning Education and Training for Industry's Needs," "Technology, Tradition and Tabu: The Planning of Tertiary Technical Education in New Guinea," "Computers in Australian Education: A Complete System," "Unit Progress: An Attempt to Cater for Individual Differences," "The Generation Gap in Administrative Structures," "Education for Administration Is Not Enough," "Planning for Effective Education: Final Review," and "The Use of Mathematical Models as an Aid to Effective Planning in Education." (JG)

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PREFACE

Papers printed in this volume are a selection from papers given by Members of The Australian College of Education at the Twelfth Annual Conference held in Perth in May, 1971. The theme of the Conference was "Planning for Effective Education".

The Presidential Address by Dr. Wm. C. Radford was given at the Official Opening of the Conference in Winthrop Hall. All the other papers were given at the Secondary Teachers' College.

It is regretted that publication could not be given to all papers but this was due to lack of space. The Publications Committee endeavoured to cover as wide a field as possible in selecting papers, keeping in mind the quality of the papers.

A complete list of all papers presented is published in the Proceedings of the Twelfth Annual Conference.

PEOPLE, POLICIES AND PLANNING

WM. C. RADFORD, M.B.E., M.A., M.ED., PH.D., F.A.C.E.

Director, Aust. Council for Educational Research, Melbourne

Homo sum. Humani nihil a me alienum puto.
I am a man and deem in human nature
Nothing unworthy of my sympathy.

So Terence, some 2,000 years past. We are members one of another.
So St. Paul in his letter to the Ephesians.
No Man is an Island. So John Donne some 1,600 years later.
And so this College, and all constructive educators since, now, and I hope for all time to come. Our theme for the next few days is planning for an effective education. In that title planning comes first; in the title of this address I have deliberately placed it last and begun with people—deliberately so that we may not forget that at the heart of every worthwhile policy and every effective plan stand the persons for whose good they are intended. I should, in fact, have begun with PERSON rather than PEOPLE, because though men in concerted action may solve problems beyond the power of a single human, I believe no contribution to our individual or to our common welfare can come except from the unfettered and untrammelled workings of the single human brain, pitted against, tested by, forced to account for its conclusions, and to justify them to others equally free. Yet there are times when I fear, and fear deeply, that we may fail to use our individuality in this way, that the blight of herd behaviour may overcome our readiness to bank upon individual, reduce our capacity to respond to individual need, our ability to see the persons who make up the people. Our herd grows bigger, its members more dependent one on another, and those who can manipulate the minds of groups and influence their action, thereby more dangerous. Increasingly our modes of social and economic organization, our very ways of thinking, seem to me to be encouraging even our necessary rebels to adopt the mental stance of others. Too many declare themselves unfettered while manacling themselves; bound to others by the bonds of accepted ideologies, or chained to a belief in the eternity of what are no more than current and changing concepts for which there is no fixed and irrevocable form, but which are, rightly enough, the concepts on which our communality must rest. They are concepts which grow only by experience, and by thought upon that experience. They are the concepts of freedom and responsibility, of liberty and licence, of equality and justice, of love and hate, and of tolerance and bigotry. They are concepts of which the poverty or richness must be based on deep and long thought on the nature of man, and therefore of the desirable purposes to which he may with satisfaction commit himself. Such thought cannot be taken ready made from the shelf by the members of any generation if they are to feel committed to a point of view. Its renewal and its improvement are matters of great moment to all of us. The obligation upon each of us to undertake such thought, to assimilate our experiences, to deepen and widen our understanding and our sympathies, is perhaps the hardest obligation that we bear in our human condition.

I have as I said therefore placed the person in the forefront of this Presidential address. In this assembly I do not believe I need to draw with clear lines the links between policy and planning, except to remind you again that in our deliberations over the next few days whatever may be said of planning, of its importance and the refined and scholarly skill which it requires, it has no value without clear policy to justify and to control it, as well as to provide goals by which its success may be judged. It is because I appreciate the enormous importance of those clear policies and the planning that derives from them, their importance for my future and yours, for those of the generations behind us that we have begotten, and those who are now following them, that I propose to concentrate most of my attention upon people, for whom alone the policies and the planning have relevance.

Who then are these people, and in particular who are the people with whom this College is concerned? No narrowly defined group, this. We are honoured in our ranks by members whose concern covers all ages and all interests, whose work must be "from the putting on until the putting off of this mortal coil". We must be so concerned, if education is in any way involved in making of us what our genes give us of capacity, and our settings give us of powers to realize that capacity. There is, we now know and we are now beginning to plan for, no given point in the time of a human life when we can say—here education begins or must begin, or here education ends or must end. It is life-long in literal truth. In our human condition at all ages we are enlarged or diminished by the opportunities for the accommodation and assimilation of experience which education provides, enlarged when we can and do accept the opportunities when the decision rests with ourselves, and diminished when for one reason or another we cannot or do not accept them.

We cannot not be concerned therefore with the circumstances under which the newborn of our times begin their existence. If there is aught of knowledge about the nutrition of the pre-born and the new-born, about prenatal and post-natal environment, that is vital for the healthy condition of sinew and nerve and cortex with which the newborn enters the physical world we have prepared for him, and that mother and family should know, then we must be concerned that that knowledge be known, and to the best of our capacity, that the knowledge be used. What we know with certainty about the diet of the mother, the intake of alcohol, of nicotine, of drugs of more potency still, and their irremediable or remediable effect on the capacity of the newborn child, his capacity for perception, for rapid assimilation of the input of his senses, for neural integration of sensation, for absorption to the best advantage of food and drink, ought to be part of the genuine folk-wisdom of the family, to the intent that no child enter the world with less than his potential. For it is here that the beginnings of avoidable inequalities between persons lie. We must in sober earnest be aware that there are no ways that we yet know to guarantee that all children enter this world equal in physical capacity, equal in mental capacity, equal in the opportunities that they will see, and take, to make the most of those capacities. We cannot whatever we will, guarantee such equality, but we can with the will to action do much greatly to reduce the present avoidable inequalities. But as to what we may do, we are not yet quite so certain. Many of the social action programmes that come so quickly to mind are, of course, unproven. There are some of us who are convinced of the need for such programs, who though accepting doubts about their efficacy, nonetheless believe that some action must be undertaken, and that now.

Tell the mothers and fathers of the future while they are in the schools, some of us are saying, tell them of the dietary and sensory nutrition needed by the pre-born and the newborn, tell them of the mental, social and sensory environment needed for children to thrive best with the physical constitution they need, and the problem may be solved.

Or establish more prenatal and post-natal clinics, fixed and mobile, and staff them not only with welfare nurses but with qualified experts in cognitive and affective and motoric development and all will be well. All children will then be equal; all may face the world with equal confidence that nothing is beyond their reach.

Or face the fact that some children will be deprived before they reach birth, or deprived in the next few years, by ignorance or neglect or simple lack of understanding by their parents. Give them as soon as their deprivation can be established compensation for it by specialist help, and again an equality will be established so that all things will be possible to all men.

Or accept that the imperfect world we live in has been fashioned by people with a less well developed social conscience than we have in this generation, accept that there are those in that world at school or elsewhere with less of their potential developed than it should be, and give them a far greater proportion of our time and energy than we give to their materially more fortunate colleagues. Discriminate, not against them, but for them. Give them the best teachers and the best conditions and they will be able to "catch up". Give them everything needed to remedy their deficiencies, to bring them sooner or later to a mark in their progression to maturity where they will be indistinguishable in merit from their contemporaries.

There are others who say that the problem is a simple one. A better distribution of income; more money available to poor families, and therefore better life conditions are the simple answers. All else derives from better material conditions.

There are still others of us less certain both of the efficacy of the proposed programs, and much less optimistic about their acceptance and fruitful use by those we think to be in dire need. An educative program for prospective parents as well as for those practising parenthood—that has much to commend it as of likely benefit, but how do we ensure that all those addressed by it profit in proportion to their children's need? May we compete participation in such activities? Do we require a repeat course when there seems to have been less gained than we think normal? And who are the 'we' prescribing and requiring such treatments for ourselves and our fellows? Dare we order such participation until we are certain of its effect? Will we ever be so certain that its benefits will produce all possible equality that we will dare to require such compulsory inoculation for educational health? Or may this kind of action be the final nail in the coffin of freedom of personal choice by parents of their children's formative environment?

May we not become like Chesterton's "new, unhappy lords", so that, like them "the load of (our) loveless pity be worse than the ancient wrongs".

Or in the inexpressibly poignant words of your own Jack Davey, in "whither" is the alternative to

> "leave us now to continue our crying,
>
> There's nothing left for us now but the terror of dying".

I do not know, and most of you will share my doubts. I do know that there are children being born into this community, even while I speak, who, though perhaps equally well endowed in all physical respects, will have very different futures. In our concern about people we must be aware that for many the future will not depend on that endowment, but on the circumstances in which it will be able to operate. Whether that awareness arouses mental and spiritual disturbance in sufficient of us will determine whether anything is done about it; and the action taken will depend both upon the numbers of us so disturbed, the positions of responsibility which we bear, and our willingness and capacity to influence decisions about the disposal of our private and our public surpluses. We give the impression all too often that we are centralists at heart, that unless action springs from our parliamentary mouthpieces little if anything can be done. We seem often to forget that what we give of our money to create those mouthpieces and fund their policies is still but a part of our total affluence. It leaves us still with a vast fund of private time, and private energy and private resources. It would be a soulless and sterile society indeed in which we lived, were it not for the willingness of many humans to help their kind without conscious thought of duty or obligation, were it not for the liking of others again for activities and interests of their own and not of public devising, for their willingness to persuade others to develop and cultivate like interests and ultimately to share in joint activity. The role of a professional body such as our College in dealing with the problems of inequality is one we have not yet confronted the hydra with enough effective weapons. Nor have we begun seriously to question the weapons we are using even now, or examine in necessary detail the causes in which they are wielded. But I have digressed a little from one of the themes I want most to leave with you. Until *we*, and I extend that 'we' in this assembly beyond our college membership, until we have shown a willingness to sacrifice much in time and money to eradicate all possible sources of unnecessary inequality, it is the height of hypocrisy to expect others to act to do so. In eliminating the man-made deficiencies of environment which will prejudice the capacity of the child to realize his endowment, there is a place, and a large place for the voluntary action of informed men and women, people dedicated to the principle of direct, personal and unmediated help for those less fortunate. There is strength in numbers, and where two or three are gathered together there will often be more done than by those acting singly. But help of this kind begins with an individual—with me and with you doing what we can with the time, and the money, and the facilities which we have at hand. Faith may move mountains, but it must begin by moving little more than the grain of sand. The faith of one man in the value of a hand held out to another struggling upwards to share his light, this may seem little beside the massive size of the task in bringing all those who struggle up to that same light, but there is no substitute for such a demonstration of possibility, and no greater inspiration to those uncertain of the worth of their own feeling towards action. Only by listening to the still small voice of someone else's need can we give those voices the opportunity to sound like clarion call to action.

In the educational world that you and I share, another great watershed of opportunity occurs in the years at and immediately beyond the upper limit of compulsory schooling. Though the Field Marshal's baton still occasionally comes out of the early leaver's knapsack, the occasions are fewer and further between. The chances of understanding, of intelligent participation in or intelligent rejection of aspects of our present society and its future image—and there is personal satisfaction in both, I believe, if they lead to action—such chances are evidently for most of the human species bound up with the experience of education within specially arranged centres and the development, from that experience, of those kinds of competence which it alone can give in our kind of society. The very early leaver is today a rare phenomenon, but the numbers who leave schools and colleges before they have adequately explored their interests and fostered their native capacity to the point where they know its potential and what they might achieve with it, are still too high.

Again because there is room for different opinions, and for different practices to follow from them, we vary in our views. There are some among our own members, as well as others, who see this early leaving as almost a wilful denial by the more well-to-do (and everyone here is in that category, I expect) of a right to a complete and fully rounded education, who see it as a failure by society in one or more of what they believe to be its duties: a failure, that is,

to provide family incomes sufficiently high to allow for such education without pauperizing the family; or

to provide the kind of education which excites and stimulates a family and its children to want more; or

to provide the child with the right kind of guidance to make him aware of the educational facilities available and the kinds of future they lead to; or, at a more revolutionary level,

to provide the kind of life that will attract us all to want to use our talents in a society making a satisfying use of our capacities.

There are concepts here of rights, and of duties, of the responsibilities in conscience of the individual and how these become active policies within society; concepts of the very nature and purpose of man; concepts which remind us that we are concerned with more than a technical process serving a predetermined end, with more than discovering the most efficient process and planning to use it effectively.

I would like to spend more time on this, to deal in particular with what I believe to be the fallacious assumption that all the fault and the guilt is on the part of government, of authority, of society, with the dangerous tendency to believe that every early leaver is a failure on the part of others in society and that neither he nor his family bears any responsibility, to deal with the implications that a publicly funded recovery and a retrieval program are therefore *ipso facto* required to ensure that the failure is adequately expiated. Time prevents it, but there is grist here for the mills of the social philosophers of personal freedom and its boundaries, and I expect to hear from them in the next few days.

I want instead to spend the remaining time that I have given to myself for this occasion touching on matters concerning both primary and secondary schooling and the people who are directly involved—children, parents, teachers and those who must plan for their effectiveness in a joint operation and watch over the process on our common behalf. For probably from five to six of every ten persons in Australia is in some way involved directly in such schooling, and we are all affected by its nature and its effectiveness.

We accept in Australia that for those prepared to avail themselves of it, we will provide at public expense school buildings, teachers, a certain level of equipment for pupils and teachers to use, and specialized services including administration to go with these. For those not prepared to use these facilities whether for religious or other reasons, no objection has been raised to the establishment of institutions in most ways similar in outlook and organization to the public schools but provided largely at cost to the parents or to those establishing them. All have broadly served the dual purpose of inducting the young into the society of which they are a key part, and of preparing them to play a more informed role in the several worlds they enter after leaving school—work, leisure, social, family and so on.

The principles and practices of the generation that established our dual system have not gone unquestioned, and this is good. The material provision that satisfied a majority of one generation is ever unlikely to satisfy its successor; even the principles upon which a system is established will not remain unchallenged. Any form of social organization including education must rejuvenate itself, be regenerated, or change with each new generation. Its principles and practices must convince those whose responsibliity they become, if they are to be dynamic and constructive. It has been one of the functions in our time, as in past eras, of the new generation of parents and teachers at all levels, and of students fresh from the toils of the secondary schools, to draw increasing attention to what they have accounted the ills of our society and the needs of our schools. Confrontation has often replaced dialogue as the popular image of the source of change, emotion has too frequently replaced rationality in the often necessary criticism of established customs and institutions, thought and assumption untested in practice have often been deified as principles. Our practices in government and law, the personal interactions and conventions about interpersonal behaviour they represent, and the organizations and institutions into which we formalize them, things which it has been one of the functions of the schools to explain to students and to persuade them to follow by both instruction and practice, have been sharply called into question over the past decade. The normal sources of leadership and authority have been under question in ways and on issues not within our past experience, often for reasons outside our understanding and often if not beyond our understanding at least sometimes beyond our ready sympathy. There are those who are denying traditional and conventional authority, and demanding more personal freedom for action and decision with their personal criteria of its rightness or wrongness as the sole test. And although in some areas of personal behaviour this may be acceptable, he is a bold man indeed other than the rare anchorite who dares claim that nothing in his personal behaviour does not despite himself affect the life of some other—and frequently many others. One can respect and sympathize with the honest belief that there are too many controls on personal and interpersonal behaviour, appropriate to earlier times perhaps but no longer appropriate to a better educated and therefore desirably more informed, more rational, more discussive society. But I at least have no sympathy with those who deny the authority of others but then claim it themselves over those in no position to oppose it, or to question it, or to remove themselves from its effects, and who assert the validity of their authority and activity without there being any external or public checks upon its worth or effectiveness. And here I would like again to draw my colleagues' attention, as I have done elsewhere, to the grave danger that we are in, in demanding to teach as we wish, to use the curricula we ourselves develop, to educate towards objectives we ourselves choose and for values we ourselves believe worthy—the danger of setting ourselves up as sole arbiters of what is good for others. We too often ignore in the act that we are there by the grace of others, that though those others may not be in obvious daily judgment of our action we are not thereby absolved from constant consultation and reference to our clients, or from the need to convince those clients, by results, that what we are doing is indeed for the best for all for whom we have taken responsibility. There is no divine right given to any one of us to educate others; we have that role by a community decision. Neither have we a right to autonomy in our methods, our curriculum, our organization, our evaluations, whether by class, or school, or system, save by direct delegation constantly renewed by those whose needs are served by our activities. We forget this at the peril of lack of support from both parents and students. The building of the direct bridges of understanding and confidence between a teacher and the society he serves, an act not dependent on the perception of the teacher as an agent of some impersonal authority but depending on a direct personal appreciation that the teacher is the agent of parent and child—the building of such bridges is a skill not easily come by. It is a skill in many schools still without precedent, a skill beside which the technology of classroom instruction, though at best in its infancy, appears by contrast to be hoary age. Policies designed by professionals and plans likewise drawn up by professionals to implement those policies, which fail to take account of the importance of this direct relationship, hold in themselves already the spores of the blight that will assuredly quickly beset them. Parliamentary approval, party approval, departmental approval, church approval, the approval of a school council—all these have their place in the scheme of things, but they are not enough. More is needed with education.

Because we are dealing with persons in society, because we share with parents responsibility for both the present and future happiness and productivity of those persons, there is no release for those of us who teach from the constant and pressing necessity to be concerned about the ends for which we teach, the values that those ends exemplify, and the methods by which we ensure their realization. Nor, if we have new values to espouse which we think improvements on the old, new or different ends to be achieved, whether these be simply educational or the more complex ones that guide and govern our society, is there any release from an obligation, the obligation to recognize that the exercise of our freedom within schools to promulgate ends and values to an audience there by compulsion is, without the consensus of parents and the sanction of colleagues, a travesty of the true role of the professional teacher.

I conclude. Because ends, and values, and means are all in constant question there can be no end to planning for an effective education. We need the distilled wisdom of the practising teacher and administrators, of the theorists and the researchers; we need the distilled wisdom of the scholars in the personal and social values of learning, and in social organization and attitudes; we need constant dialogue between such groups and parents and the products of our schools, dialogue about ends and means and the nature of the resources that must go to the achievement of approved ends. We need variety because persons singly and in their freely chosen groupings are varied in their interests and values and needs, and we have not yet found any perfect solution to the problems of living, and playing, and working together in ways that satisfy our need for self expression. Policies that forget about this variety, and plans that ignore it, will condemn the institutions that result to a mental and spiritual stagnation; they will guarantee disaffection by pupils, by parents, by teachers. They will effectively serve no one. Policies that respect this variety, plans that have a built-in capacity to accommodate it, will make honest capital of the wealth of the persons we serve, the talents of our pupils, and the strength of their families. It is to those ends that over the next few days our best efforts must be devoted.

PLANNING FOR EFFECTIVE EDUCATION: A MATTER OF FAITH OR DESPAIR?

R. T. FITZGERALD, M.A., DIP.ED., M.A.C.E.

Chief Research Officer, ACER Melbourne

Consider the two following arguments. The first put forward by an English professor of education during the mid 1930s contains a firm act of faith. The second, advanced by a well-known American writer in 1970, echoes feelings of despair.

First the act of faith:

> 'The ultimate basis of any sound education is not enquiry, but faith. It is a regimen of routine, a continuous rhythm presupposing at every point established norms and injured by nothing so much as by dubieties, hesitations and too many fresh starts.'[1] (F. Clarke—*A Review of Educational Thought*)

Second, the act of despair:

> 'Almost every child on the first day he sets foot in a school building is smarter, more curious, less afraid of what he doesn't know, better at finding and figuring things out, more confident, resourceful, persistent and independent than he will ever again be in his schooling, or, unless he is very unusual and lucky, for the rest of his life.'[2] (J. Holt—*The Under Achieving School*)

How would each of us react if asked to side with one or other of these conflicting viewpoints? We might protest that both exaggerate the position and lack any real evidence to support them. Fair enough. Yet we could hardly dodge the basic point at issue. Either the process of schooling, as we know it, remains essentially sound and needs at worst only minor changes, or the whole business has become suspect and calls for urgent reform. Our particular response will indicate the kind of planning we favour.

The term 'planning' has, of course, become one of the new in-words for educators. But if to 'plan' is literally to devise a new scheme of things, we have had little use for it in Australia. So far we have preferred to follow ad hoc and piecemeal methods characteristic of the pre-World War II period overseas. More comprehensive techniques, which incorporate long-range views and seek to integrate educational policy with broader economic and social development, have yet to be applied seriously. There has still to emerge any serious challenge to the status quo.

Our outdated federal system of government has discouraged any complete approach to planning. The states retain a constitutional responsibility for providing educational services but lack adequate financial resources.

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[1] Clarke, F. *A Review of Educational Thought*, London, 1936, p.7.

[2] Holt, J. *The Under Achieving School*, New York, 1970, p.17.

Having lost their main taxing powers in 1942, state governments have had to make do with smaller proportions of the gross national product than they enjoyed even during the 1920s and 1930s.[3] Other countries have demonstrated a close link between level of national income and level of educational expenditure. Not so Australia. In Edding's study of twenty-three countries, Australia ranks fifth in national income per capita but only sixteenth in educational expenditure as per cent of national income.[4] Our school systems seem therefore to have been victims of circumstance.

The matter of financial responsibility has continued to bedevil policy-making. One key task in planning is to decide how much of the nation's resources should be devoted to a particular enterprise and to indicate where these are to be found. Governments in Australia have yet to address themselves collectively to these questions. Consequently, we lack any real sense of priorities concerning education and other forms of national endeavour. This applies also to activities within the field of education itself.

A general failure to set firm goals and spell out ways of achieving them on a national scale has worked to put our educational services under growing pressures. These have in part been due to demographic factors related to birth and immigration rates. They have in part resulted from official policy in raising the school leaving age and abolishing middle school examinations. During the past decade, especially, all governments in Australia have taken measures which have increased community demand for education.

To increase social demand for any service without first taking account of its likely consequences is hazardous. Such a policy too readily assumes that the more formal learning for each adolescent the better. This belief tends to ignore questions of costs and resources as well as wider economic and social issues, including manpower needs. It also tends to overstimulate public demand for educational services, to underestimate costs and to dilute the supply of qualified teachers.[5] These consequences have become only too evident in Australia.

Worse seems still to come. Currently we face a growing demand for pre-school facilities and soon a new surge of primary school entrants. At higher levels rising proportions of adolescents remain on longer at secondary school and want to undertake tertiary studies. Thousands of them are disappointed. Yet we have produced no meaningful guidelines which define what is reasonable opportunity in relation to likely resources and what is realistic aspiration in the light of manpower needs. Given this kind of drift, planning becomes impossible.

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[3] State government expenditure from consolidated revenue rose gradually during the twenties from 12 per cent to 15 per cent of GNP in 1929-30. The same figure in 1934 was 16 per cent and in 1939 14 per cent. However, the proportion of 11.5 per cent in 1945 had fallen to 9.8 per cent in 1950. Source: C.B.C.S. Finance Bulletins and Commonwealth Year Books.

[4] Edding, F. in *Economics of Education*, Robinson and Vaizey, editors, 1966, pp.26 et seq.

[5] Coombs, P. H. *Fundamentals of Educational Planning*, UNESCO, 1970, pp.37 et seq.

The response of teachers to this state of affairs has been ambivalent. On one hand, they have welcomed the expansion of facilities in response to public demand. After all, it is nice to feel wanted and to enjoy new opportunities for promotion. On the other, teachers' unions have deplored the resulting shortages in buildings and staffing. Consequently they have urged governments—both Commonwealth and State—to allocate vast new funds to education.

Teacher-led campaigns with this goal have become a familiar feature of the post-war period in Australia. So far they have lacked any marked success. The community has proved loath to believe that any 'crisis' looms in education. School systems, in fact, show a wonderful capacity to expand at will and seem most unlikely to collapse. Historical factors, moreover, have worked against concerted attempts to interest the man in the street in the field of education.

In the last century local community effort failed to set up effective school facilities. It got no second chance. State governments in establishing their school systems gave the ordinary citizen no real voice in their operation. Distant authorities decided the curriculum and usually appointed the staff to teach it through prescribed textbooks and methods. The task of assessing the results was left to the school inspector and the public examiner.

The community could thus regard their school systems very much like the railways or similar public utility. Provided the service was readily available and operated efficiently, there seemed little obvious cause for concern. Similarly, the parish school, by being staffed by religious orders, encouraged much the same attitude among Catholics.

Other factors operated to keep the school rather remote from the community. In the widely mobile colonial society, material success did not hinge on successful study. Many self-taught men rose to prominence and made fortunes. Also the schools, by adopting European ways and textbooks tended to appear as something alien to the local way of life.[6]

The remote and artificial character of our school systems does much to explain the long standing public apathy towards them. Until very recently, it was only in the traumatic times of the 1940-45 period—when our whole civilization came under threat—that any stirrings of a vital interest became evident. Within their short-lived visions of a better world, political parties and other groups gave serious, if brief, thought to a new deal for education. Now, some twenty-five years later, the course of events is enforcing a more thorough reappraisal.

So far the emphasis has been laid on quantitative factors. In the 1940s the call by teacher and parent bodies was for a £100 million loan for new and remodelled buildings.[7] Today, the demands, though more elaborate, remain essentially in the same vein. The most striking example has been the combined request by the state ministers for education for almost $8,000 million.[8] This amount, according to their national survey of needs, should be allocated to running the state school systems over the next four years. The absence of any explicit criteria suggests that these funds are intended only to extend and improve the existing kinds of services.

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[6] See Dent, H. C. 'Some Impressions of Australian Education', Cunningham Papers, ACER, 1952. Dent, education editor for the *Times*, saw Australian schooling as being alien in practice to the local way of life.

Yet qualitative factors are at issue. Sound planning requires us to re-examine the aims, methods and outcomes of the whole educational enterprise. The alternative is to rely on acts of faith and to hope that government leaders will come to share our belief. If so, we may remain disappointed. In this country the layman has proved reluctant to accept reformist claims that smaller classes, better buildings and more elaborate equipment automatically bring about better learning. His scepticism seems well founded. It is salutary to note the emerging feelings of despair among American scholars towards their school systems following the huge allocations of finance of the post-sputnik period. Our more Scrooge-like policies do not make pointless the matter of costs and returns.

Even as they stand, the costs of public schooling are considerable. At primary level these run annually to some $250 per student and at the secondary stage to about $400 per student.[9] The rapidly growing group of senior secondary students involves not only relatively high school costs but also the amount of income foregone by their not going out to work—in all yearly as much as $2000 per head or even more. School buildings, too, have become highly expensive affairs. A fully equipped secondary school, which accommodates 1000 students, now involves an outlay of about $2 million. Moreover, this elaborate plant often operates for little more than six months of the year if based on a forty-hour week. In order to justify this large expenditure, schools need to fulfil successfully their special role.

Schools exist essentially as unique agencies for formal learning. Yet their distinctive role has become steadily blurred. Schools now share their traditional function of dispensing knowledge with the mass media. They also compete with television, films, radio and popular magazines in attempting to influence tastes and attitudes. In other ways, too, the outside world has come to intrude increasingly into the work of the classroom.

Educators have long sought to control the learning process wholly from within the classroom. In this seemingly God-given setting, teachers have typically sought to impose a regular routine of exercises. These have aimed at a mastery of those things the particular group of 30, 40 or more students should know. Success in this task has appeared reliant on the right teaching methods, right subject matter and right student attitude. Given these conditions, failure has seemed attributable to low student intelligence.

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[7] For details of the New Deal for Education Movement see *Education* (NSW Teachers' Federation), October 18 1945, p.359.

[8] *Nation Wide Survey of Educational Needs*, Australian Education Council, Sydney, 1970.

[9] See Fitzgerald, R. T. *The Secondary School at Sixes and Sevens*, ACER, 1970, p.180. The figures quoted for 1971 are estimates.

Even if this traditional attitude has changed (and how far has it really?) the learning process remains orientated to the classroom. We still like to believe in some kind of mysterious alchemy being created there from the formal interaction between teacher, pupil and task. Reflecting this viewpoint, one writer has recently asserted that 'The teacher can create new knowledge through what he does in the classroom, in his own personal laboratory for professional learning.'[10] Most of us would probably like to agree with him.

We are now witnessing increasingly elaborate attempts to transform the classroom from a child pen for mass instruction to a flexible space for individual learning. Carpeted floors, acoustic ceilings and movable walls have already become familiar features of the open floor plan. Other changes seem certain to come—some quite extraordinary. One experimental classroom in the United States, for instance, contains tiers of octahedron—shaped little boxes into which each child can retreat. To quote from the blurb: 'This way the teacher can give pupils individual attention, while the children have a private place for study.' It goes on, 'since students with top units can only reach them by clambering over units below, they must also learn to be good neighbours.'[11] Should this idea catch on, then the space-capsule age in schooling will surely have arrived.

Whether physically transformed or not, the classroom remains the focal point for all new approaches to learning. Team teaching, programmed exercises and audio-visual methods, for example, are essentially geared to this setting. The same may be said of ungraded forms of schooling. A common objective has been to cause the individual child to learn better. Yet to what extent any of these approaches succeeds in that aim has still to be shown.

The current quest for totally effective classroom techniques seems worthwhile only if factors external to the school do not greatly influence the child's capacity to learn. Recent research has provided further evidence that they do. We know that various factors and forces within the particular environment come to bear heavily on school performance mainly because they affect motivation. Encouraging attitudes by both parents and teachers, allied with a sense of purpose among students towards the particular tasks set, would appear to count just as much as any inborn intelligence towards successful learning.[12] Merely to alter the classroom approach seems therefore hardly the complete answer.

Schools, as we know them, are not geared to promote learning on this wider basis. Their rigid routines and emphasis on mass instruction usually forbid much professional interaction between individual teacher and parents. The old take-it-or-leave-it attitude still seems to prevail. The same applies to students. True, adolescents at secondary level commonly enjoy a wider choice of subjects than previously, but their personal reactions to the way these are taught are seldom canvassed. Teachers still tend to measure student response essentially in terms of academic performance.

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[10] Frazier, A. in *The New Elementary School* (Frazier editor), New York, 1968, p.102.

[11] See 'Stack of One-room Schoolhouses', *Life*, Vol. 49, No. 11, November 23 1970, pp.20-21.

[12] See for example, Pidgeon, D. A. *Expectation and Pupil Performance*, London, 1970.

Whether or not students actually enjoy learning has seemed of little importance. Two recent ACER surveys indicate that large proportions (over 40 per cent) of students at both primary and secondary levels either dislike what they are doing or consider school to be largely a waste of time.[13] The response of certain groups of adolescents, as the English study by Hargreaves reveals,[14] is to reject the whole system and to replace it with their own separate peer culture. In Australia, large numbers of students still see schools as coldly authoritarian and unfriendly places.[15] Yet we go on expecting them to learn successfully in the usual ways.

In reality, schools can justify their 'regimen of routine' and 'continuous rhythm' only by force of custom. Their programmes typically consist of collections of particular exercises and activities related to the various subject areas. Each of these has usually involved its own special method of approach. Presumably the total effect has been a balanced education. Given this general state of belief, pedagogy—despite strong links with history and psychology—has tended to remain a separate and relatively self-contained field.

Major advances in the social sciences during recent decades have resulted in a changing viewpoint. Social research has increasingly come to stress the relatedness of factors and elements formerly considered distant from one another. Consequently we are steadily becoming aware of the influence of politics, economics and social structure on educational policy. We have also begun to recognize the interplay of a complex of factors on learning performance.

Work in the field of education is thus becoming more and more demanding. We can anticipate a further shift in the approach to research studies away from the purely descriptive and narrowly analytic to more synthetic ways of handling a wide range of data related to particular situations and issues. The same forces have come to bear on the tasking of teaching. Schools, if they are to function effectively, need to take account of them.

We have seen in recent years some notable attempts being made overseas to transform the teacher's role. One objective has been to permit him more scope for action by reducing the load of clerical routine through the services of classroom aides or assistants. By contrast, some curriculum developers have used their elaborate resources to produce learning materials structured in ways that reduce the initiative and possible intellectual contribution of the teacher.

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[13] Fitzgerald, R. T., *The Primary School in the Community*, ACER Occasional Paper, 1971. The survey of secondary schools, in Australia was undertaken in 1970 by M. J. Rosier for the IEA Science Project. The findings are to be published in due course.

[14] Hargreaves, D. H. *Social Relations in a Secondary School*, New York, 1968, and subsequent references follow as set out.

[15] Refer IEA Science Project: large proportions of students both at the mid-secondary and final secondary year stages evinced unfavourable attitudes.

In both cases the results have yet to prove highly successful. The classroom aide clearly requires a special kind of training and involves a more enlightened approach by the teacher.[16] The latter point also applies to project packaged materials. Experience has shown that unless teachers fully understand their rationale and purpose, they are often reluctant to use them.[17]

The trend in Australia has been to allow the teacher more scope for initiative. First at the primary level and later at the secondary stage the school has come to enjoy more and more autonomy. In some states especially, high school principals are able to formulate independently of education departments their own policies in respect to a whole range of matters—from length of hair to type of course and assessment. Correspondingly, the work of the schools has become less and less subject to the scrutiny of the inspector and the public examiner.

As a result one detects a growing sense of ambiguity in respect to the key issue of responsibility. On one hand, education departments continue to provide a kind of bureaucratic direction and umbrella support for their large bodies of public servants. On the other, they are handing over to the same group of quasi-professionals the task of determining policy in the schools themselves. Under these circumstances, it is hard to know where ultimate responsibility really lies.

A crucial question here is whether teachers are competent to make what amount to final decisions on course structure and methods. Their limited professional training gives much cause for doubt. In what virtually amounts to little more than one year's study in pedagogy, teachers can hardly have mastered the complexities of curriculum design and evaluation. Moreover, if the task of evaluating individual student performance is to embrace related personal and family factors, then the schools face impossible demands.

In the light of these trends, parents may well question their position. Given the current wave of diversity, they can hardly accept the old assumption that the particular class into which their children are drafted functions on much the same lines as any other. Yet parents have little recourse should they find the service unsatisfactory. Many of them enjoy no real alternative to the kind of schooling offered and rarely have a voice in the framing of school policy. We thus pay only lip service to parental rights.

Inevitably this lack of consultation gives rise to serious misunderstanding and conflict of purpose. A recent survey of attitudes among sixth-year primary students as well as of those of their teachers and parents has provided disquieting findings.[18] An overwhelming majority of parents (four out of every five) believe that 'the main task of the primary school is to teach that useful body of facts which every child should know' and that 'primary schools should concentrate on preparing their students for success at secondary school.'[19] Students tend to side with their parents on both points and especially the latter. Yet only a small minority (about one in every four) of teachers agrees with them. Teachers clearly want to see the primary school as a stage of education in its own right.

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[16] See Duthie, J. H. *A Study of the Teacher's Day*, H.M.S.O., Edinburgh, 1970.
[17] See Goodlad, J. I. *The Changing School Curriculum*, Washington, 1968, p.92.

This conflict in attitude raises again the basic issue of responsibility for the outcomes of schooling. Nowadays a child typically spends seven years at the primary level and then three or four years at the secondary stage. Yet seldom, if ever, does any one teacher or group of teachers oversee and valuate the individual student's progress over the whole period. Moreover, given the almost total lack of interaction between primary and secondary teachers, one reluctantly feels a certain sympathy towards the viewpoint of parents and students.

The present position readily gives rise to feelings of despair. Radical changes often enlightened in nature—are taking place both within and without the schools. Yet their outcomes appear doubtful and even harmful because we have failed to anticipate and take account of their relationship to existing organizational structures and resources. So far we have failed to determine those kinds of approach which seem best to promote successful learning as carefully defined. Consequently we have not reached the stage of trying to persuade government leaders and the community in general that major reforms are needed.

In planning any new overall scheme of things, we would first need to clarify some basic philosophical issues. Most important, we have yet to state what in fact constitutes reasonable equality of opportunity in education. National needs and priorities should both influence this rationale and determine the nature and extent of services offered. Nevertheless, we are faced with making explicit our beliefs to such basic questions as life-long education and the opportunity for a second chance.

Only then should we look at the matter of resources and their best use. It is possible that by adopting different ways of utilizing existing facilities and staff, we could offer far greater opportunities for learning. This applies especially to the matter of professional skills. The 'spontaneous, diffuse and ill-defined elements'[20] involved in classroom practice has so far discouraged much close analysis of the teacher's job. Yet such an analysis must form part of any attempt to develop better ways of achieving set objectives or to create an adequate technology.

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[18] ACER Survey op cit. The study involved all government primary schools in the Warragul Inspectorate of Victoria.

[19] ibid.

[20] Dreeben, R. *The Nature of Teaching, Schools and the Work of Teachers,* Chicago, 1970, p.83.

The complex nature of the learning process means that schools need to have on hand far greater resources than they now enjoy. If the educator's job is essentially to transmit knowledge, then the common assumption that 'anyone can teach' holds much force. However, if the educator's task is to design, supervise and evaluate a set of learning experiences related to personal and environmental factors, the professional demands are of the highest order.

These demands oblige us to create what would virtually be a new elite of educators. We might do this by offering to suitably qualified and experienced teachers special doctoral level courses comprising major elements of sociology, psychology and advanced clinical practice. Moreover, the prospect of salaries and opportunities for research and study similar to those provided in the universities could do much to retain these talented and enterprising people in the schools.

The creation of this new force could produce significant advantages. Like the professorial board in universities, each group of special educators (numbering perhaps as many as 12 in a school of 1000) could determine general school policy and leave the affairs of everyday management to registrars and their administrative personnel. Under the broad supervision of state commissions and regional boards of education, schools could thus control their own staffing. Moreover, they could, with the aid of computer services, organize and monitor learning programmes that make full use of general community facilities such as art galleries, libraries, orchestras, adventure camps and vocational training centres. This approach would provide real alternatives to the present limiting context of the classroom.

Formal learning could thus take place under professional supervision in places other than schools. Groups of special educators might, for instance, set up their own street corner academies or learning clinics and be recompensed from an education fund similar to the present national health scheme. Under this arrangement, parents would not only be able to enjoy some rights of choice over how their children are educated but also to participate actively in their learning programmes.

Relieved of much of their existing work in mass instruction, schools could devote much more attention to the disadvantaged. They could offer special help—including child-minding and custodial care—to students from unfavourable and broken homes as well as to those with emotional and other difficulties. Given a stable core of key educators, the schools could come to maintain continuing links with the community. The subsequent performance and careers of school leavers and other related data would greatly assist educators to understand better the learning process and its outcomes.

In these ways, the schools could fulfil an increasingly valuable role. Given new kinds of professional and administrative resources they could, by operating on a nine-to-nine basis at the upper secondary and higher levels, offer both a second chance to adults and more convenient time-tables to adolescents, especially those employed part time. This arrangement would also make possible the use of a wider range of teaching and instructional skills (whether of qualified married women or craftsmen, artists and musicians) at present relatively untapped. It is here that the presence of the team of special educators could largely resolve many of the outstanding problems of proper professional supervision and of adequate training. Our failure to distinguish clearly the tasks of educating from those of instructing remains a major cause of difficulty in staffing the schools.

These proposals, however seemingly way out, are little or no more radical in nature than some of the changes already taking place within the schools. They do not depend on unrealistically huge increases in expenditure and promise, in fact, to bring about certain economies. If the reforms advocated appear Utopian, it is essentially because they involve a restructuring of existing administration and organization. Here the outlook is depressing. Large bureaucratic systems with all their in-built inertia together with other vested interests constitute formidable barriers to reform. The dictum that 'he who is heard does not innovate, he who innovates is not heard'[21] applies well to the field of education. While it is possible that some emerging new thrust within the field may soon manage to move mountains,[22] it seems more likely that only bold and enlightened action by statesmen at both federal and state levels of government will product much effect.

The kind of planning for effective education we favour depends very much on our particular concept of that goal. If it incorporates the idea of life-long learning then we are committed to bringing about a new order of things. Under this we will no longer see in-school and out-of-school learning as being inherently different activities but integrated with the aim of encouraging and stimulating the continual growth—in every sense of the term—of each citizen.

To plan on this basis is to evince neither blind faith nor deep despair but sound hopes for a better world. It is easier, of course, for those in power and authority to maintain traditional forms and procedures. Yet the implications of doing so seem clear. The education systems will, as Coombs points out, 'waste resources, exacerbate the crisis that already grips them, fail in their mission, jeopardize their own survival and impose untold penalties on future generations'[23].

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[21] Merton, R. in *Social Theory and Society* (Merton edit.), Glencoe, p.217.
[22] See Bassett, G. W. *Planning in Australian Education*, ACER, 1970, p.174.
[23] Coombs, P. H. op cit. p.54.

EDUCATION FOR ADMINISTRATION

W. G. WALKER, M.A., PH.D., F.A.C.E.

Professor of Education, New England University, N.S.W.

AND

A. R. THOMAS, B.ECON., B.ED., T.P.T.C., T.T.C. FOR DEAF, M.A.C.E.

Senior Lecturer, Department of Education, New England University, N.S.W.

The quality of practice in educational administration depends upon the quality and range of insights available to the administrator when he makes decisions. The quality of practice in educational administration is measured by the impact it has upon the development of the potentialities of individual teachers.

These propositions are not hard to defend, but they sound pretentious. Pretentious or not, they have validity and we stand by them. This paper will be concerned with discussing a few—though by no means all—of the implications of the above propositions for those who seek to educate administrators.

The question of whether or not administrators *should* be educated for their role is a hollow one, for the fact is that the administrator *will* be educated—if not by instruction, by example; if not by reading, by trial and error. The question to be asked, then, is not whether the administrator should be educated, but in what ways he should be educated most effectively and most efficiently for his role as a practitioner.

Firstly, what is educational administration all about? It is worth repeating a hundred times that it is about the individual child and the fullest development of his potentialities—and because education is such a personal, interactive phenomenon it is about the individual teacher and the fullest development of *his* potentialities, too.

If these statements seem trite, their implications are not. We need to remind ourselves again and again that teaching is, or should be, an intensely personal relationship, that the links between teacher and child are subtle and fragile, that the humanity and flexibility of this relationship need to be developed at all costs—even in the face of rigid traditional structures, fixed curricula, and the impersonality, power and pomposity of bureaucracy.

Secondly, administration is about the development of an organizational climate in which the freedom and inspiration for learning are encouraged and developed to the highest degree. This is one important way in which the administration of schools differs from that of other institutions. It is one thing to provide a climate in which customers will want to buy, or clerks will enjoy office work, or university students studying by choice (and usually motivated by vocational ends) will be encouraged to work: it is another thing altogether to develop climates in which children who are compulsorily at school and teachers who are largely 'captive' professionals because of their lack of widely marketable qualifications, are encouraged in the hard realities of teaching and learning. We wish that more of the armchair experts who see the administration of schools as just another minor form of public administration would study Richard Carlson's[1] typology of organizations which cogently classifies the clients of schools with those of mental hospitals and gaols.

Thirdly, it is about understanding organizational behaviour as such. All administrators, whether schools or elsewhere, are faced with the basic problem of man and organization, with what Chris Argyris[2] calls achieving congruency between the needs of the individual and the demands of the organization. The needs of the individual may be interpreted in terms of individual behaviour, of behaviour in formal or informal groups, of behaviour as an organization man—but interpreted they must be: there is no ignoring them.

This paper is entitled baldly 'Education for Administration'. Perhaps we should begin by stressing that we do not believe that in the present state of human knowledge it is possible to *train*, or educate if you like, an administrator how to deal explicitly with the multifarious decision-making situations which face him every hour and sometimes every few minutes of every day.

The process of administration, like the process of teaching, is a personal interaction situation. The administrator interacts with individuals, with groups from both within and without the organization, and with administrators of other organizations. The behaviour of individuals, groups and organizations is shaped by a multitude of forces—for example, by a charismatic leader, by a disgruntled staff, by a building which prevents face to face communication, by climatic conditions, by the age and sex of participants, by the time of the year and even the time of the day—indeed by a great complex of forces which unequivocally deny any attempt to arrive at the tight, closely knit sets of principles of administration so much beloved by the writers of some 'how to do it' textbooks, especially in the field of business management.

The fact of the matter is that the process of administration remains very much a great, lonely and only partly charted sea which must be approached with the caution, respect and optimism, something like that with which modern day explorers face the Antarctic wastes. From past experience in other lands and other climes certain weather patterns, ice conditions, wind velocity and so on are anticipated with some degree of certainty, but always there remains a large area of doubt where science is not enough and when the arts of decision making, leadership and executive capacity are called for in the form of mere human endeavour.

The leader of an expedition to the unknown or even the mere unexpected needs more than a nice, tight set of principles, of 'do's and don'ts', if he is both to achieve his goal and maintain the viscidity of the group of humans entrusted to him.

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[1] Carlson, R. O. 'Environmental Constraints and Organizational Consequences: The Public School and Its Clients'. In Griffiths, D. E. (Ed.) *Behavioural Science and Educational Administration*, Chicago, N.S.S.E., 1964.

[2] Argyris, Chris *Personality and Organization*, New York, Harper, 1957.

On the contrary, he needs a wide range of ideas, of conceptual resources, from which he can select when routine answers and routine procedures will no longer suffice.

So it is with the administration of the organizational animal we call 'school'. For much of the time it lives predictably, comfortably in what Lonsdale[3] calls 'dynamic equilibrium with its environment'. But at times—and these are the times when the real administrator/leader marks himself off from the mere manager—the predictable, the comfortable no longer exists, and the educational administrator must turn to the widest possible range of resources in order to identify the problem and select a solution which will best serve the interests of the children and teachers in his care.

Thus, as suggested at the beginning of this paper, educating the administrator is largely a process of providing him with the widest possible range of insights into organizational and administrative behaviour.

What kinds of insights does he need? For the educator of administrators these can be classified in a number of ways. Five simple categories which suggest a basic curriculum for administrative preparation are:

1. ORGANIZATIONAL ACHIEVEMENT

Any administrator needs to be constantly concerned with developing a nice balance between achievement and maintenance. The man who ruthlessly works towards his goals while the morale of the staff (and hence of the children) collapses about him enjoys a Phyrric Victory indeed. On the other hand the man who turns his back on the goals of the organization in order merely to preserve the status quo, to avoid 'rocking the boat', is in no lesser way selling the children in his care short.

The duality raises further questions such as how organizational achievement is to be defined and measured. How does one go about setting up realistic objectives in education—how are such objectives arrived at, how expressed, how defined in behavioural terms of meaning to teachers and children (not to mention those 'old men of the sea' of Australian schools, the inspectors), and when expressed, defined, made operational, perhaps, how is the extent of their achievement measured? By simple observation, rating scale, 'team' teaching, examination, discussion, videotaping? What are the possibilities? How reliable are they? How valid are they?

2. ORGANIZATIONAL INVOLVEMENT

One of the most significant findings of social psychology this century is the importance of the involvement of members of the organization in defining and working towards the organization's goals. Involvement is very much a personal or group matter as the work of Mayo[4] and many workers since his time have shown. But *how* does one involve? What if one is an autocrat who already knows the right answers? In such a case staff involvement becomes little more than a cynical form of human engineering. What if one wishes to involve his staff, but does now know how? How do communication nets help? How does one communicate with teachers in a school designed with half a dozen staff rooms and no common room?

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[3] Lonsdale, R. C. 'Maintaining the Organization in Dynamic Equilibrium', in Griffiths, D.E. (Ed.) *Behavioural Science and Educational Administration*, Chicago, N.S.S.E., 1964.

3. ORGANIZATIONAL DECISION-MAKING

All administrators must make decisions. Indeed it is the quality and timing of their decisions that marks them off as successful executives, and which provides a criterion measure by which they are judged.

But decision making is by no means a simple process. The first difficulty is to identify the problem—in effect, to ask the right questions. How does one obtain data on which to make decisions? From the deputy headmaster? From cronies on the staff? From departmental heads? The formal organization must show its hand, but how is the real core of the school, the informal organization, to be persuaded to give up its secrets? How does one identify the group of individuals which possess the information needed in the best interests of pupils?

And when the information, such as it is, has been gleaned, how does one sift out the wheat from the chaff? How does the administrator decide?

4. ORGANIZATIONAL FLEXIBILITY

In their heart of hearts most administrators recognize that children are individuals with their own particular loves and hates, confidences and fears, abilities and disabilities. Most subscribe, at least in theory, to the view that schools should strive to provide for those individual characteristics.

But the achievement of flexibility is much more difficult than it looks to those outside the organization. How can teachers be convinced that the state syllabus is not a bible? How can inspectors be influenced to look favourably upon the ambivalent teacher who rejects much of what the bureaucracy stands for, and yet tries devotedly to teach his children, albeit in divergent ways? How can the embittered late middle-aged teacher, almost certainly left on the promotional shelf, be persuaded to cease being one of Presthus's indifferents[5] grudgingly selling his time to the organization for the freedom it gives him to do the things he really wants to do after school and at weekends—and have him enthuse the children, for a change?

How are innovations introduced in schools? Are there useful theories of change? How *does* an administrator influence?

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[4] Mayo, Elton *The Human Problems of an Industrial Civilization*, Cambridge, Mass., Harvard Business School, 1946.

[5] Presthus, Robert *The Organizational Society*, New York, Knopf, 1962.

5. ORGANIZATIONAL DEMANDS

As Argyris[6] and others have so convincingly shown, one of the most crucial problems in administration is the man-organization relationship. This is a special problem in the great Australian education departments, for the more rules and regulations an organization has the more difficult it is to cater for the needs of its individual participants.

The administrator is daily faced with the trauma produced by what Argyris refers to as the 'basic incongruency' between men and organizations. The administrator sitting behind his desk in head office must decide whether a compassionate request on the part of a young teacher to live with her mother in the city is of more importance than meeting the needs of a country high school for a teacher of mathematics. A principal must weigh up the gravity of a teacher's continual tardiness against the quality of his teaching in the classroom, or the effect of a teacher's university studies on the progress of the children in his classes. The examples are, of course, legion and are only too well known to all administrators.

These five areas of discussion could be extended considerably. They have been cited to show that the problem areas in administration can be identified and that a considerable literature exists to suggest a variety of approaches from which the principal or other administrator selects one or more alternative modes of action.

In our view education for administration consists in large measure of sensitizing the practising administrator or, indeed, the administrator-to-be, to the likely problem areas and to the resources of theory available to deal with them.

The next major section of this paper asks how the administrator is to be introduced to these resources? He can, of course, discuss his role with his colleagues—that will be of some help. He can read the literature relating to organizational behaviour and that, coupled with discussion with colleagues, will be of even more help. He can, if spurred on by a university lecturer or some other expert, study case studies or other exercises which relate his own organizational situation to the literature. Better still, he can discuss these disciplined attempts to understand the reality of his organizational behaviour with his lecturer and his colleagues. One day, in more cases than many administrators realize, he might even undertake research work in his own or another organization, which will further sharpen his understanding of organizational phenomena.

All of the above alternatives, though valuable, assume that the administrator *has already met and identified the problem situation*. What of the tyro administrator, or the administrator-to-be? How is he to be 'educated for administration'? Will he be left, like most other Australian administrators, to learn by trial and error, at the expense of the children and the teachers in his school or school system?

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[6] Argyris, Chris *Interpersonal Competence and Organizational Effectiveness*, Homewood, Ill. Irwin, 1962.

The wastefulness of trial and error learning can be partly avoided through a number of approaches, among which are apprenticeship to another person in an administrative position, simulated administrative situations and the internship.

Apprenticeship refers to the process of learning by doing under the supervision of a more experienced person. It impiies little academic education and places the emphasis on 'on-the-job' training. In spite of the obvious advantages inherent in 'getting one's hands dirty' there are serious objections to apprenticeship pure and simple. It tends to revere established procedures, to impose stereotypes, to straight-jacket those of different personality from that characteristic of the 'master'.

On the other hand, simulation provides an economical and largely threat-free situation in which the budding administrator plays games designed to present him with problem solving situations taken from real life. Simulations take many forms. Some common examples used in Australia are the case study, the 'in-basket', the management game and the role-play.

The case study has been described by Lawrence[7] as 'chunks of reality based on stubborn facts that must be faced up to in real life situations'. The cases may be printed in book form or reproduced on an audiotape or videotape. They may be read and considered by individuals, discussed in groups, dissected in class or used in a number of other ways.

The in-basket is used in much the same way. It requires an administrator to make quick decisions about priorities, communication channels, human relations, governmental requirements and so on. It calls on him to relate his experience, his lecture material, his reading to real life problems which must be dealt with in a restricted time.

The role play is really the acting out of a case study. Participants are asked to play certain roles, to adopt certain attitudes, to argue with verisimilitude. The role play is observed by students who try to analyze the situation, to isolate its dynamics, to relate what is going on to their organization and, of course, to their own reading and past experience.

The interniship[8] is a largely unknown approach in Australia. Unlike apprenticeship, internship takes place *after* a period of formal training, and typically a member of staff who assisted in the formal education at university assists in the supervision and guidance of the student when he goes to work for an organization. Normally the ex-student receives a small salary from the employing authority, which recognizes him as a tyro and accepts responsibility with the university, for the supervision of his experience.

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[7] Lawrence, P. R. 'The Preparation of Case Material', in Andrews, K. R. (Ed.) *The Case Method of Teaching: Human Relations and Administration*, Cambridge, Mass., Harvard University Press, 1953, quoted in Walker, W. G. *The Principal at Work*, St. Lucia, University of Queensland Press, 1968.

[8] Hencley, Stephen P. (Ed.) *The Internship in Administrative Preparation*, Columbus, Ohio, U.C.E.A., 1963.

This approach obviously has much to commend it, and is one which Australian universities and school systems might explore with benefit in the course of the next few years.

Education for administration, as we have seen, implies education for understanding the behaviour of individuals, groups and organizations *qua* organizations. Clearly, education for administration implies a knowledge of individual psychology and group psychology, of the sociology of the group, of the organization and of the society in which the organization exists. It may also imply some knowledge of anthropology or perhaps of some history. Certainly, at higher levels of administration it implies more than a nodding acquaintance with economics and politics and with the structures of educational systems in other countries and provinces. Some knowledge of statistical techniques is desirable and in this age at least a passing acquaintance with the computer is desirable.

If the provision of such a background seems a tall order it might be sobering to reflect that we take six years to train a physician or a physicist, three years to give a minimum qualification to a teacher or a nurse. Why should we begrudge one or two years to train an educational administrator?

If it is argued that this allocation of time, and money, is wasteful, consider the responsibilities of the headmaster of even a small high school, for example. He is responsible for the education of not 40 children, but of 500 or 600 of them; their welfare, happiness and initiative of no less than 20 teachers (and their immediate families) depend upon the quality of his leadership; a school plant valued at perhaps half a million dollars is his responsibility; a non-professional staff of cleaners, maids, groundsman, aides, etc., look to him as 'boss'; a whole town or suburb trusts him with its most precious possessions; the state or school council looks to him not only to run his school with economy and efficiency, but also to innovate. They expect in one man both a visionary and an actuary, to inspire and to lead. We demand all of this and yet, in Australia, begrudge the time and money to educate him to accept these responsibilities.

The heads of our schools, and especially those at secondary level, are increasingly coming under fire for their lack of ability to deal with the multifarious duties referred to above. Increasingly heads are accused of 'taking refuge in their offices', of devoting their time to administrivia, of avoiding their traditional role as teacher, guide, mentor and educational leader. And who can blame them? Not only the world but the immediate community, not only society itself but the individual child is changing profoundly from year to year.

In the buzzing confusion of the administrative day where does the administrator turn? To his past experience? But the past is dead. To his colleagues? Perhaps, but most of them know only the same past as he. To the bureaucracy which employs him? Perhaps, but most of the hierarchy know an even older past. To his books? Certainly, if they are concerned with the child, the teacher and the school of today. Certainly, if they are designed to help the reader understand contemporary society, contemporary organizations, contemporary teachers and contemporary children. Certainly, if they serve to link theory and practice, philosophy and the ongoing realities of the classroom and the staff room.

To his university? Certainly, if its Faculty of Education has been dragged kicking and screaming into the twentieth century, or better still, the twenty-first century!

Obviously, no one direction will do. All of these alternatives—and many more—will provide him with some new insights, some new ideas worth trying.

As we saw at the beginning of this paper, the administrator needs resources—wide resources to which he can turn for guidance in the buzzing confusion of the administrative day. These resources come in the main from the social sciences and from the work of scholars and practitioners who daily seek to apply the social sciences to the cutting face of administration. The particular choice of the social science and the emphasis to be given to those chosen is very largely a function of the administrator's own academic background and of his likely administrative responsibilities.

It behoves universities, tertiary institutions and employing authorities to develop professional programmes for the education of educational administrators. In universities, such programmes need not all be of master's or doctoral level—if this were so, it would restrict education for administration to a very few indeed at this stage in our educational history.

There is a pressing need and unsatiated demand in Australia for one or two-year programmes for non-graduate administrators. These might be provided by institutes, colleges of advanced education and teacher's colleges. But the need does not stop there.

We call for an Australia-wide attack on the problem of education for school administration. The vast difficulties facing administrators, whether in rural or urban schools, education departments or religious orders, secondary schools or universities are too complex and too pressing to be left to trial and error learning.

Experience has already shown that far sighted employing bodies and tertiary institutions can achieve much if they have the will to do so.

It seems clear that the attack should take place at several levels—and we stress that there are models for all of these already in existence in Australia today. Some examples of what has been achieved are:

1. Two or three-day conferences called by departments of education (e.g., Tasmanian principals and vice-principals at Launceston), professional associations (Australian College of Education at Townsville), teaching orders (Ursuline nuns at Armidale). These typically take the form of a rather crowded programme in which one or two experts from outside the immediate sponsoring organization give lectures, conduct seminars and lead simulation activities. They are a very valuable and economical means of opening the eyes of

administrators to the availability of books on the subject and the possibility of undertaking longer and more demanding courses in the field.

2. One or two-week long in-service courses which allow for a rather more detailed study of particular problem areas (e.g., in-service vacation courses at Armidale Teachers' College; Training Administration courses conducted by the Department of the Navy at HMAS Cerberus; the special course for New South Wales Inspectors of Schools at Goldstein College, University of New South Wales).
3. Non-residential courses of ten weeks or so duration which attempt to introduce administrators to some of the available literature, require the writing of essays or exercises and sometimes award a certificate for satisfactory completion of the course. Some excellent examples are the courses taught jointly by the South Australian Education Department and the South Australian Institute of Technology, the courses offered at Kew High School and the Wangaratta Adult Education Centre by the Victorian Department of Education.
4. Courses of a much more demanding and systematic nature taught over a period of a year or more by non-university tertiary institutions.

To date there is only one such course of this type in Australia—the well-conceived Diploma in Educational Administration programme offered by the West Australian Institute of Technology, although the Armidale Teachers' College hopes to offer a similar course internally and externally in the near future.

5. University courses at post-graduate level. Such courses, now taught by several Australian universities, range from professionally oriented diplomas and master's degrees to research oriented master's degrees and doctorates. Among the new programmes of potential interest are the course-type master's degree in Educational Administration now being offered by the Universities of Queensland and New England.

Thus there is a need for the vast expansion of training programmes at all of these levels, though certain caveats should be expressed at this stage. These are:

1. There is a danger that the short weekend or week-long programmes might be seen as sufficient in themselves. Of course, they can do no more than whet appetites. They rarely challenge participants to think deeply about the administrative process, or to relate administrative behaviour to the larger fields of organizational or societal behaviour, or to read and write intelligently about what they are doing when they administer. In such courses there is a very real danger of dilettantism or of a preoccupation with the 'how to do it' alone rather than the why *and* how to do it.
2. Much the same danger is inherent in the ten or twenty-week lecture programmes referred to above, but at least in such programmes some solid reading is expected and some written and oral presentations

are required. Like the shorter courses these must be seen as no more than stimulating an interest in wider reading and a more disciplined approach to study of the process.

3. A third major caveat refers to the dangers inherent in education departments and teaching orders running their own programmes of training without introducing lecturers and organizers from outside the organization. If such organizations are not careful their courses degenerate into platitudinous re-introductions to organizational stereotypes. At the present time there is talk in some parts of Australia of the establishment by Education Departments of staff colleges. In a country where most teachers are recruited from government schools, trained in government schools, employed by the government, inspected by the government and promoted by the government such organizations could easily degenerate into stereotype machines where superannuated inspectors of schools and senior people 'kicked upstairs' because of ineptitude on the firing line might be expected to tell the headmasters of tomorrow how they ran the schools of yesterday. Such narrowly conceived organizations must be viewed by the teaching profession as a whole with great suspicion, for the educational administrator, no less than the public administrator, or hospital administrator, stands to gain from contact with colleagues and students in other fields of administration—and the most obvious places in which this should take place are the university or a general staff college for administrators from a variety of institutions.

4. A fourth caveat refers to the assumption made in some quarters that educational administration is merely one aspect of business administration or of public administration. Nothing could be further from the truth, as every teacher who has spent sleepless nights tossing over the personal and academic problems of those forty or so human souls so trustingly placed in his care, knows only too well.

   Of course, there is a core of knowledge which is common to the administrative process wherever it is carried out but it is at the level of objectives, of interpersonal relationships, of appreciating the subtlety of the fragile relationship between teacher and child that educational administration departs firmly from other fields.

   In their haste, however laudable, to begin offering courses in educational administration some institutions have turned to business administration or public administration for help, and in too many cases have, as a result, overlooked the crucial mission of the school.

5. A fifth caveat refers to the need in tertiary institutions concerned with education for administration to keep their instruction, no matter how 'theoretical' or concerned with 'principles' tied squarely to the *practice* of administration. We have said elsewhere,[9] and we do not hesitate to repeat it here, that there is nothing more practical than

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[9] Walker, W. G. *Theory and Practice in Educational Administration*, St. Lucia, University of Queensland Press, 1970.

> good theory. One great virtue of the university is its concern for research as well as teaching. It needs constantly, in the education of the administrator, to be probing the realities of administration, developing theories, testing hypotheses, probing beneath the surface. The administrative process is a complex process, modern organizations are complex animals, administrative behaviour takes place in a complex environment. The complex organization, to be understood, needs continuous and enlightened probing by the social scientist, be it in education, psychology, sociology, anthropology, economics, politics or elsewhere. The fruits of that probing need constantly to be kept before the administrator who is being educated for his role.

Teacher education in this country has been compared, not without justification in some cases, with a course of medical education which devotes three-quarters of its time to a study of the Hippocratic oath. If we, the teaching profession, let this happen to the education of administrators, we are lost. Of course, the administrator must be concerned with values, with aims, objectives, and due attention must be paid to them. But in real life decisions must be made, and made quickly and wisely from the greatest range of resources available to the practitioner. It is here that the university makes its great contribution to the field of administrator education. It brings to bear studies of ethics, of values, of human endeavour written in history and literature, and links them with research into this organizational animal 'school' compared in its complexity by Schwab[10] with that complexity which faces a psychologist who attempts to study the interaction of parts of a living organism.

When we educate for administration we educate for flexibility, insight and breadth of vision. We educate for the capacity to ask the right question, to seek out the most relevant data, to choose the most promising solution. We educate to sensitize the administrator to the realities of education as a political and economic animal as well as the value oriented, idealized and often unrealistic animal the textbooks tend to put before us.

It was said that Professor Sir Francis Anderson, sometime Professor of Moral and Political Philosophy at the University of Sydney, and a one-time Presbyterian, would pull the pillow over his ears to drown out the sound of Sunday morning church bells. Too many Australian administrators are taking a similar attitude to education for administration. They deliberately overlook the fact that it is going on inexorably day by day, traumatically for children and teachers, uneconomically for governments and inefficiently for education departments. The choice is not between no education for administration and education for administration, but between an education for administration based on unsystematic, narrow, trial and error learning which runs contrary to almost every educational principle we cherish, and systematic, perceptive and broad instruction which holds the promise of schools with climates in which both children and teachers might be encouraged to grow.

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[10] Schwab, Joseph J. 'The Professorship in Educational Administration: Theory-Art-Practice', Chapter IV in Willower, Donald J. and Culbertson, Jack *The Professorship in Educational Administration*, Columbus, Ohio, U.C.E.A., 1964.

HELPING THE TEACHER THROUGH SYSTEM ADMINISTRATION

A paper read at the Twelfth Annual Conference of the Australia College of Education, Perth, May 1971.

J. G. WILLIAMS, B.A., B.SC., B.ED., M.A.C.E.

Senior Lecturer, W.A. Institute of Technology

This paper consists of three related sections. In the first I suggest that there is a general tendency to view Australian education through a conceptual filter of bureaucracy which discolours and clouds the perception of reality. Replacing the narrow bureaucratic framework of analysis with a broader viewpoint will improve understanding of the administration of Australian education and may generate administrative practices which are more helpful to the teacher. The first section is an exercise in descriptive organization theory.

The second section develops a normative proposition that administration in education should be explicitly teacher centred. I will argue that the focus of the administrative system should be fixed directly on the teacher, not on the pupil or curriculum or buildings or other inputs to the school.

In the third section I propose a new approach to the professional development of teachers which might replace or invigorate current practice in school supervision.

SECTION 1: THE CONCEPTUAL FILTER OF BUREAUCRACY

There is scarcely any need to remind this audience that we perceive everything selectively as though through filters. We are well aware that our ears and eyes are highly selective filters which admit only fractions of the full range of vibrations and waves in the air and space around us. We know the psychological and other mechanisms by which we filter out the whole of reality except for the small part we can cope with at any one time. But we may not recognize so clearly that we use filters, conceptual ones, to look at organizations in which we live and work. And we may not always be fully aware that our perceptions of many things are determined to a large extent by characteristic ways of thinking which prevail in our period of history or in our particular nation or group.

I suggest for serious consideration that we Australians, and our critics from overseas, habitually view our schools through a frame of reference or filter which is too strongly coloured by the concept of bureaucracy. This focuses undue attention on the hierarchical skeletal structure of Australian educational organizations and obscures appreciation of the living reality, the vital flesh and blood of the system. We use a sort of X-ray filter which reveals the static bones and hides the organic life of the system. We need reminding that the concept of bureaucracy is an abstract theoretical tool for analysis. Like X-rays and other analytical tools it can reveal only a narrow fragment of reality. We tend to see hierarchical structure as the most prominent feature of our educational organizations because the conceptual filter we use highlights that feature. Other features will show up just as prominently if we use different theoretical filters. The bureaucratic structure of Australian education is only as important as the attention we give it.

I may be misinterpreted as saying that Australian educational organizations are not bureaucratic, they only look that way. So it needs to be made clear that any filter or theoretical framework used to examine an organization can only illumine what is actually present in the organization. There is no doubt that Australian education does contain many elements which can be partially understood in terms of bureaucracy theory. But some of these elements are undergoing rapid change which cannot be discussed meaningfully in the language of formal organization and hierarchy.

Analytical tools become blunted and irrelevant. My argument is that the concept of bureaucracy is no longer an appropriate framework for understanding the Australian education systems. Teachers, administrators and observers may misinterpret important developments in school administration if they continue to think in terms of traditional formal organization theory. Other theoretical standpoints are needed to give a more balanced understanding of the system and to encourage administrative practices which will be more helpful to the teacher. While we continue to think in bureaucratic terms we will continue to behave in bureaucratic ways.

Power as a new theoretical framework

In rejecting traditional organization theory as an inadequate basis for examining administration in Australian education we are belatedly following a trend which is well established in the study of other kinds of organizations. J. D. Thompson asserts that the pyramid of hierarchy became the symbol of complex organization only 'through historical and misleading accident',[1] while J. A. Litterer suggests that studying formal structure is the most elementary level of thinking about organizations.[2] Our understanding is slightly improved when we acknowledge that a spontaneous informal organization co-exists with the formal, but this approach, too, is seriously misleading. To split the organization into separate formal and informal components is to imply, very unrealistically, that one is legitimate and desirable, the other illegitimate and condescendingly to be tolerated. Modern social scientists are searching for the live stuff of administration in what earlier theorists tossed out as informal organization. But this more recent approach has been slow to penetrate into the published literature on educational administration and into the administrative practices of school systems.

One recent approach which is typical of the more broadly-based ways of thinking uses the concept of power as a tool for analysis of organizations and a brief discussion of school systems in terms of power may give an interesting new appearance to familiar things.

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[1] Thompson, J. D. *Organizations in Action,* New York, McGraw-Hill, 1967, p.132.

[2] Litterer, J. A. *Organizations: Structure and Behaviour,* New York, Wiley, 1969, p.vi.

Our habitual approach stresses the static backbone of authority which supports the Australian educational organizations. Analysis in terms of power concepts may sharpen our view of the less visible life blood which is diffused throughout the system and which sustains and energizes its vital activities.

Power in a school system is derived from many sources, distributed liberally among many people, and used with great inefficiency to convert human and other inputs into educational and other outputs. The most significant issue is that power in any educational organization is widely distributed. Specifically, I suggest, power over people, resources and decisions in Australian education systems is much more diffused than is usually recognized.

Until recently the stereotyped picture of state education departments in Australia, emphasized a clear chain of authority reaching by official delegation from Minister through Director-General, directors, superintendents and principals to teachers. Legal statutes and regulations made by Parliament and executed by Minister and Director-General were accepted as the ultimate and almost unique sources of power over people, decisions, and resources. Other types and sources of power did in fact operate, for some people and practices departed from the stereotyped pattern. But by and large administrative behaviour was regulated by the assumption that it depended on a chain of legal authority linked to state government statutes. This was the conceptual model which determined the predominant pattern of administration. In this model power was of one kind, *de jure*, derived from state legislation, based ultimately on the Australian Constitution, and concentrated down a thin pipeline of legal authority.

Carzo and Yanouzas are two modern writers who reject this kind of traditional theory according to which 'the direction for the course of events in a formal organization flows downward only through the hierarchy of authority'.[3] Research evidence shows, they claim, 'that authority which is based on the official position provides only one source of influence. It is often unsuccessful. There are many more bases for influence in an organization'.[4]

W. G. Bennis refers to 'the coming death of bureaucracy'.[5] Every age, he says, develops an organizational form appropriate to its genius and the bureaucratic form is out of joint with contemporary realities. New organizational forms are being created in modern industry. These new forms give process more attention than structure; they emphasize lateral rather than vertical relationships; they are designed essentially around multidirectional flows of information, men, materials and behaviour rather than around the simple vertical flow of authority. Stanley Young asserts that changes in culture and advances in technology are producing new techniques of management.[6] To graft these on to the primitive organizational vehicle of bureaucracy is, according to Young, like the vain attempts which were made seventy years ago to attach the powerful new internal combustion engine to the ancient horse buggy. The vehicle had to be substantially redesigned to suit its new source of power.

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[3] Carzo, R. and Yanouzas, J. N. *Formal Organizations: A Systems Approach*, Homewood, Irwin, 1967, p.182.

[4] Ibid, p.183.

[5] Bennis, W. G. 'The coming death of bureaucracy', in Cleland, D. I. and King, W. R. *Systems, Organizations, Analysis, Management: A Book of Readings*, New York, McGraw-Hill, 1969, pp.11-17.

Young's analogy should not be taken too far and some writers may be going too fast in their violent reaction against bureaucracy. I have no doubt that Australian education will retain for many years the basic organizational framework of bureaucracy. I hope, however, that we will all come to see more clearly that this framework is just the chassis, an important part of the administrative system, but not its main source of energy.

Already in Australian education departures from the formal legal-authority model have become frequent, significant and apparent. The old bureaucratic stereotype is no longer a workable description of the power relationships which now determine administrative behaviour. A diffused power model gives a more accurate description of reality. I will demonstrate this with a few examples, but first some terms must be explained.

Power and its Sources

This is not the place to attempt an abstract analysis of power structure and process or even a precise definition of power. For present purposes it matters little whether we think of power in terms of getting people to do what we wish, or in terms of right or capacity to make significant or final decisions, or in terms of control over allocation of resources. These are three typical ways of thinking about power, as influence over people or decisions or resources, but ultimately they converge in meaning. My hypothesis about power distribution in Australian education applies to all three.

In interpreting the examples given later I make these assumptions about the meaning of power:

(a) Power refers to a relationship between two or more people;

(b) Some kind of dependence on the power holder(s) is involved in the relationship;

(c) Usually this dependence is reciprocal, a matter of mutual dependence;

(d) Power relates to the exchange of goods or services (which may be intangible as well as tangible);

(e) A person has power over another if he controls something which the other values;

(f) Power resides in the possibility of withholding as well as of giving.

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[6] Young, S. 'Organization as a Total System', in Cleland & King, op. cit., pp.51-62.

Examples of diffused power

Let us examine some examples of power diffusion in Australian education.

To begin with a simple case at the bottom of the system, teachers are inclined to assume that cleaners, typists and technicians should not have power in a school. Whether they *should* have it or not is an academic question. The fact is that they do, because they occupy strategic locations which give them control over important activities in the daily work flow of the school. To counter this *de facto* power, which is by no means trivial, the teacher finds official authority less effective than more subtle symbolic rewards or unofficial services which he can exchange for extra cleaning duties or prompt typing or a well-prepared laboratory.

At the other end of the school system the most visible break with the legal-authority model of administration is the substitution of the financial power of the federal government for the constitutional power of the state government over some important decisions and resource allocations in education. Where previously it was thought that a state government had sole power over its education system, it is now obvious that state officials have to share power, in several ways that do not need documentation, with officials of the federal government. Clearly a kind of finance-powered federal-state partnership in education is replacing the former state monopoly powered by the authority of the Constitution. To relieve those who fear the increasing power of the federal government in education, it may help to remember that power is not fixed in quantity. As several writers point out, for example Miklos and J. D. Thompson, the power of both parties in a power relationship can increase as latent sources of influence are brought into operation.[7] One level of government can gain power without the other losing it.

As another example of the trend towards diffusion of power in education, consider the top level administrators in a state education department, namely the Minister, Director-General and his Deputy. These three work in the boundary between the education system and its environment and act as a buffer to insulate the system against outside pressures. In the past, when the environment of education was more stable and the system itself relatively closed and small, these top administrators could cope with the necessary outside interactions and still have energy and time left over to deal with internal operations and relations. But in post-war years the energy of these administrators in the boundary layer has had to be turned increasingly outwards to regulate pressures from rapid and critical changes in society. At the same time the education system itself has become internally larger and more complex. The net result has been to draw the Minister and Director-General away from short-term, day-to-day, internal operations towards long-term planning, community relationships, and political policy. These top-level administrators have become increasingly dependent on subordinates for information and advice and for the effectiveness of their control over internal operations. They have had to shed or share power.

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[7] Miklos, I. 'Increasing participation in decision making', *Canadian Administrator*, 9, 6, March 1970. Thompson, op. cit., p.32.

For examples at the managerial level in Australian education, the trend towards spread of power is seen most clearly in the redistribution of the supervisory powers of superintendents and in the urge for greater autonomy of school principals. The former was well described in Mr. H. Dettman's article in the *Australian Journal of Education* for June 1969,[8] while the latter was exemplified in a public statement made last year by the South Australian Minister for Education. The observable fact that headmasters vary considerably in the amount of discretion they exercise is, I think, a further indication that considerable power does lie in their own hands if they care to use it.

The power possessed by the teacher in the classroom will be considered in Section 2 of the paper, but to illustrate the general trend reference can be made here to the changing duties of senior masters in high schools, the emergence of teaching teams and other developments in internal school organization. But the most vivid illustration is the sudden world-wide outburst of teacher militancy. Recent actions by Victorian teachers and press campaigns in other Australian States are part of a world-wide pattern shown in Japan, U.S.A., Canada, Britain and elsewhere. Teachers, individually and collectively, are seeking more influence over educational decisions and can be expected to continue pressing for a greater share of power.

As a final example, the emergence of student power has to be recognized, as current reality in Australian tertiary education and as a growing force in high schools.

To conclude Section 1 of the paper, this superficial presentation of a few examples of power diffusion proves nothing, but it may draw attention to a trend towards new patterns of power relationships which seems to be emerging in Australian education systems. 'Official' legal authority and power, confined to few people, have become less predominant in the theory and practice of administration. Explicit recognition is growing of the *de facto* legitimacy of power based on such resources as money, time, information, skill, expertise, electoral votes, status and other symbolic rewards, personality, etc. Of particular importance in the diffusion of power is the success of the education system itself in encouraging people to think. As one writer has said, 'we cannot expec[illegible] highly educated society . . . to be a docile society'.[9] We can expect that the trend will continue towards even greater diffusion of power in the administration of education. In particular teachers will exercise more power, and this leads us to Section 2 of the paper.

SECTION 2: FOCUS OF ADMINISTRATION ON THE TEACHER

In the second part of the paper I wish to present the principle that, though education might be child centred, educational administration must be teacher centred. The primary direct object of the administrative system is not the pupil or buildings or curriculum or planning: it is the teacher. I make no pretence of trying to prove this normative proposition. It might be taken as the best working hypothesis available or as a traditionally accepted axiom in education. My purpose at the moment is simply to restate the principle in several different ways. I believe there is some danger that in our intense concern with curriculum development, technological innovation and rational use of resources, we may leave the teacher behind, as we have perhaps left the driver behind in the development of the motor car. We need to pause sometimes to restore conscious and explicit awareness that the aims of education are achieved through the teacher and that the teacher must therefore remain the principal focus of administrative effort.

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[8] Dettman, H. 'Changes in school supervision in Western Australia'. *Australian Journal of Education*, 13, 2, June 1969, pp.147-1661.

[9] Goldhammer, K. 'Local organization and administration, in Morphet, E. L. and Ryan C. O. (Ed.) *Implications for Education of Prospective Changes in Society*, New York, Citation Press, 1967, pp.244-267.

Stripped to essentials my argument is that the teacher is a professional person providing professional service to his clients and that the administration exists to enable and assist as well as to control this service. In this bare form the proposition is overstated and idealized. Administration does have other functions and I recognize the limitations of many teachers and the necessary constraints which society places on freedom in the school. But I prefer not to obscure the mainline argument by tracking down all the qualifying 'ifs and buts'. I think it necessary to reiterate an important principle: the core function of the administrative system in education should continue to be seen as helping the teacher to carry out the task of education.

Economy

To begin with economics, education systems spend more money on teachers than on all other inputs combined. In Western Australia, for example in 1968-69, total expenditure for primary education, including all capital and recurrent costs, was $28 million. $15 million of this was for teachers' salaries. In secondary education $10 million was spent on teachers' salaries in a total of $18 million.[10] Quite clearly the teacher represents a heavy investment of resources and one function of the administration is surely to get the best possible return from this investment.

To borrow again from economics, the most efficient incremental investment that can be made of the limited resources of education is investment in improving the teacher. Marginal improvements in the teacher's performance are amplified by increasing his educational effect on the thousands of pupils he influences during his career. Improving the teacher will give greater return per dollar in educational outputs than improvements in buildings, equipment or materials. In fact most educational improvements and innovations depend on the teacher for any effect at all. The teacher is not only an amplifier, he is also a 'go-no go' switch, because he is the only connection between most of these other inputs and educational outputs. I suspect that sometimes large amounts are spent on new types of buildings or facilities, and relatively small amounts on training and helping the teacher to use them. We need to reverse this kind of imbalance.

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[10] W.A. Education Department, *Annual Report 1969*, Perth, Government Printer, 1970, pp.61-62.

David Cohen of Macquarie University, expressed similar thoughts in a recent article on Australia's educational problems: 'Let me state quite strongly that the best hopes of solution don't lie in equipment, buildings, libraries—but in one key factor, namely the teaching-learning process' which, Cohen says, is 'the responsibility largely of one person—the teacher'. He continues: 'the greatest single determinant of educational quality unquestionably remains as the quality of the classroom teacher'.[11] This assertion is reinforced by Robert H. Anderson's concept of the learning process as a triangular set of interactions between teacher, pupil and curriculum. Anderson's diagram is shown in Figure 1.[12] I have rotated it in Figure 2 to stress that most of the inputs to this learning process enter through the teacher, who clearly occupies the most critical strategic position in the formal education system. Nearly all inputs to the system are filtered into the learning process through him. He determines which inputs get into the learning process and how well they are used. He therefore substantially controls the quality of the short-term outputs to the formal education system. Formal schooling is only one agency in the total educational effort of the community, but it is the teacher who regulates whatever this agency contributes in the long term to the formation of the mature person, the responsible citizen and ultimately the quality of society.

Referring back to Section 1 of the paper, we may note here the tremendous potential power which the teacher has because of his strategic location in the most vital part of the education system. We cannot take this potential power away from the teacher but we can inhibit and suppress it, as we may have done in the past, or we can liberate it and use it as we shall have to do in the future.

Organization

My next argument in this attempt to clarify relationships between administration and teachers starts with a little organization theory from Talcott Parsons.[13]

In every formal organization, according to Parsons, there are three essential sub-systems, each with its own distinct kind of function. There is, firstly, a technical sub-system whose function it is to carry out the productive task of the organization, that is to produce the goods or provide the services for which the organization exists. In formal education the technical functions are the processes of teaching conducted in classes by teachers.

These technical functions require resources, which must be procured, and they involve relationships with clients or beneficiaries, which must be determined. Hence a set of second order problems exists above the technical order. In an educational organization teachers must be recruited and allocated, classrooms and physical facilities must be provided, and decisions must be made about what children should be taught what things by what kinds of teachers on what terms and conditions. An administrative or managerial sub-system is required to deal with these second order problems. In Australian government education departments this sub-system is peopled mainly by directors, superintendents, and principals.

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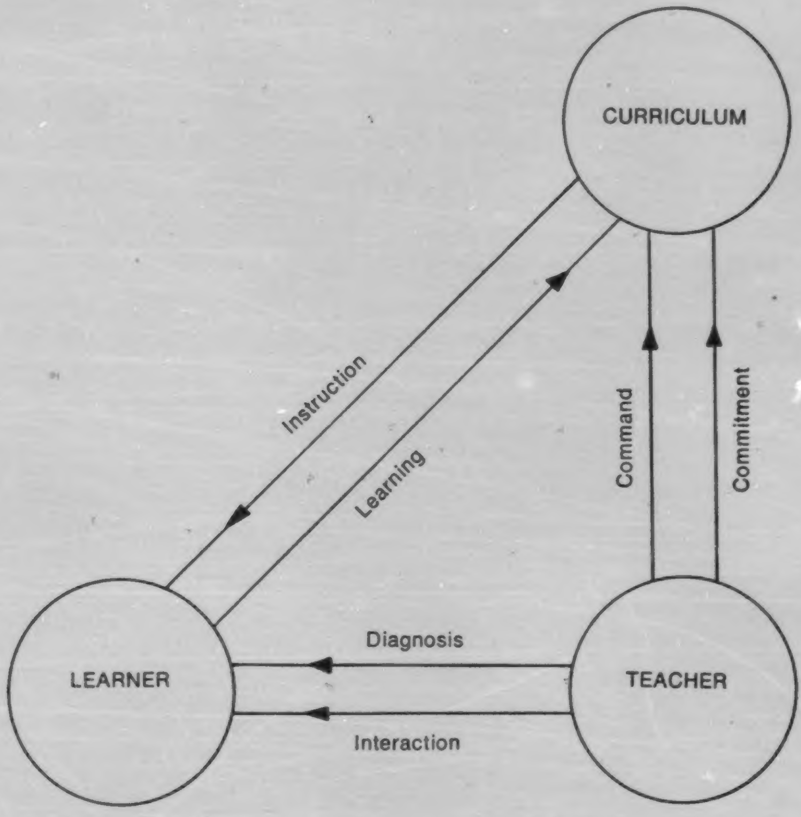
[11] Cohen, D. 'Are your children being educated or merely processed?', *The National Times*, February 8th-13th, 1971, p.27.

[12] Anderson, R. H. *Teaching in a World of Change*, New York, Harcourt, Brace and World, 1966, p.19.

[13] Parsons, T. 'Some ingredients of a general theory of formal organization', in Halpin, A. W. (Ed.) *Administrative Theory in Education*, Chicago, University of Chicago Press, 1967, pp.40-73.

Parsons distinguishes a third set of functions, in all formal organizations, above those of the technical and managerial sub-systems. This set concerns the relations of the organization with the wider community from which it draws its meaning or purpose and its higher level support.



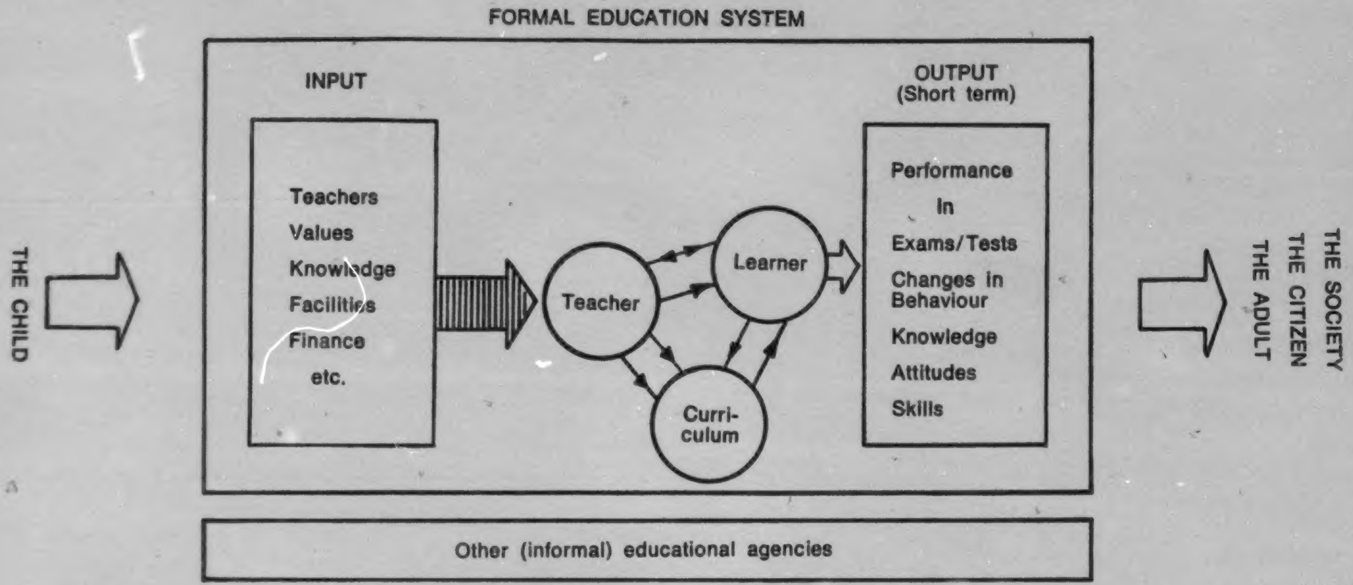


Figure 2. The formal education system.

An important point made and emphasized by Parsons is that each sub-system differs sharply from the other two in the organizational functions it serves, the kind of problems it has to solve, and the tasks it has to accomplish. Therefore, says Parsons, the people in a higher sub-system do not simply tell the people in the next system down what to do, because these people 'lower down' must exercise types of competence and must shoulder responsibilities which cannot be regarded as simply delegated by superiors. The functions of the lower sub-system are distinctly different in kind from those of the higher. They are not just lower order details of higher level functions. Parsons refers particularly to a crucial problem of organization which appears when the personnel of the technical system reach a full professional level of competence.

The preceding paragraphs give a very brief account of part of Parsons's general theory of organization. I am using this to examine relations between the managerial and technical sub-systems in education, with particular reference to state departments. I believe there is a special problem here due to two conditions peculiar to educational organizations. In the first place, most people who fill the managerial sub-system in education have previously worked in the technical sub-system. Secondly, in these days, the people who now occupy the technical sub-system, that is the teachers, are reaching higher levels of professional competence. In consequence we are beginning to witness in education the crucial problems of organization which Parsons predicts. I will deal with these two issues separately.

Regarding the first of these issues, in education the managers, that is the divisional directors, superintendents and principals, have usually been trained for and worked for some time in the teaching sub-system. In their new managerial situation they can easily be tempted to carry over their old orientations and to retain too much involvement in the teaching functions. In various ways they can steal these from the teachers to whom by nature they belong. In Parsons's terms the managerial sub-system has two main functions—to control and to service the technical sub-system. The natural tendency for the ex-teachers in the managerial positions would be to emphasize the control function at the expense of service.

Certainly in the past Australian inspectors and principals have been primarily concerned with tight supervision of teachers. Inspectors and principals were the experts who knew how to teach and the teacher in the classroom was expected to conform to their mandatory 'suggestions'. In the present the balance between control and service is shifting. The teacher is becoming recognized as the expert in teaching and the person in charge of the classroom. The managers still retain their responsibility for ensuring quality in education, but now they are more likely to do this by providing the teacher with resources and help. If my interpretation is correct, educational organizations in Australia are beginning to move towards the proper kind of functional differentiation between the managerial and technical sub-systems, that is the kind which exists in organizations in general, according to Parsons.

Professionalization of Teaching

My final point in Section 2 refers to a condition which is causing significant changes in organizational structures in many enterprises. This is the increasing specialization and professionalization of staff which is occurring in industry, commerce and government. This condition is producing new flexible forms of organization which cut across hierarchical structure. Specialization is one effect of the 'knowledge explosion' and those people whose specialized knowledge lies in a segment which is vital to their society or essential to their organization achieve special status or power.

The unique status of the professional carries over from society in general to organizations in particular in two ways. First the professional has specialized knowledge and competence on which his organization depends. He is an expert who must participate genuinely in crucial decisions. As Parsons says, the professional must be given and must accept responsibility for his professional judgement and performance and the organizational structure must provide for this to happen. Secondly, the professional in the organization is almost necessarily ambivalent in his allegiance. He is committed by contract to the organization in which he works and to the authority of his superiors. But on the other hand his professional colleagues outside the organization form the reference group for much of his occupational behaviour and attitudes.

The expansion and specialization of knowledge have increased the proportions of professions and professionals in the work force but have also changed the nature of the professions. The typical professional used to be a self-employed person working independently in a face-to-face relationship with individual clients and having almost complete autonomy in his professional decisions. Now the typical professional is more likely to work in an organization, co-operating with specialists from his own or other professions. In making his professional decisions he is likely to be dependent on advice or information from others, and in carrying out these decisions he often uses facilities controlled by professional or para-professional colleagues.

The modern professional is therefore subject to more constraints and has less autonomy than was accorded him in the traditional image of a profession. But the modern professional in the organization has more autonomy and discretion over technical decisions than the traditional image and form of organizations allowed. In the next decade I think that solving the problem of the professional in the organization will be a major development in organizational theory and practice. Already, I believe, this is becoming a basic issue in educational administration.

In the past the occupation of teaching, at the primary and secondary levels, met few of the criteria of a profession, but on many dimensions teaching is now moving rapidly towards professional status. The body of codified theoretical knowledge in education is expanding; preparation programmes for teachers are being lengthened and more teachers have high academic qualifications; teachers are beginning to exercise more discretion and autonomy in their school and classroom decisions; teacher associations are becoming more ethical and less industrial in outlook; they are more aware of their links with teachers outside their own school system; and they are attempting to move towards control over entry to their occupation. These trends are not the simple continuance of a gradual rise in standards, but a sharp discontinuity which reflects newly emerging importance and self-consciousness for the teacher. In Peter Drucker's words this is an age of discontinuity, caused primarily by the growth of knowledge.[14] Knowledge occupies the central position in our society, and in consequence education is on the point of radical transformation.[15] We know that schools are changing but we may not realize the full depth of the discontinuity which, according to Philip Coombs, began about 1950 in education throughout the world.[16]

I believe the prophecies of Peter Drucker and Philip Coombs: education will be transformed in the next few decades—but only to the extent that teachers are transformed. I suggest that for rapid improvement in education the most efficient strategy will be rapid professionalization of teachers. Improving the quality of education depends primarily on improving the competence and status of teachers.

How we might do this is the topic for Section 3 of this address.

SECTION 3: PROFESSIONAL DEVELOPMENT BY OBJECTIVES

In Section 1 of the paper I suggested that formal authority continues to function as the supportive structure of Australian education but that it can no longer be regarded as the principal source of enlivening power for school and classroom operations. Clearly the power which energizes the work flow of the school system is derived from a wide variety of sources, of which statutory authority is only one.

In Section 2 I asserted that the teacher is the critical power centre in formal education, that is in that part of education which occurs in schools. Most inputs enter the formal education process through the teacher and depend on his capacity and commitment for their educational effects. In the main it is the teacher who converts inputs into outputs in the education system.

The teacher is therefore in a position of tremendous *potential* power, much of which has remained latent because the school pattern which was set about two hundred years ago was deliberately designed to limit the power of the teacher. The school we inherited from the eighteenth and nineteenth centuries was a conservative institution whose primary function was to preserve and transmit the culture and values of the past. It was never the intention of our grandparents and their grandparents that the school should be used to improve or develop social institutions. Subconsciously they built tangible and intangible controls into the school system to restrict the autonomy of the teacher and to make certain that schools would lag behind their times. The founders of our present school system would have agreed with a statement by Professor R. Jean Hills that 'the primary responsibility of the educational organization in any society is to maintain the system in its patterned state, not to change the state of the system'.[17]

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[14] Drucker, P. F. *The Age of Discontinuity*, London, Heinemann, 1969, p.ix.

[15] Ibid, p.313.

[16] Coombs, P. *The World Educational Crisis*, New York, O.U.P., 1968, p.18.

But our society is committed to social improvement and technological change. Education is now quite clearly an instrument of social reform as well as of social stability. While still transmitting the past our schools are also expected to anticipate the uncertain future and to prepare the new generation for it. The value pattern which our schools have to maintain gives high priority to pluralism and change and to personal individual responsibility. This implies a kind of school which is new in many respects. In the school of the past real responsibility and accountability were attached to inspectors and directors. *Their* values and *their* decisions were the critical ones. Neither teachers nor pupils could in justice be held substantially accountable, for they were allowed little discretion. But now real responsibility is being passed down to the teacher, and beyond him to the pupil. Increasingly the teacher is being held accountable for his own professional decisions and values.

This raises a serious dilemma for society. On the one hand the teacher must be given more professional autonomy if education is to reach the high standards which society needs. On the other hand the autonomous teacher is a threat—he is in a powerful position to misuse scarce resources or to distort and impede what society intends for young people.

Large scale industry and commerce have had to face a similar dilemma. On the one hand modern firms need risk-taking self-controlling managers at all levels. On the other hand these autonomous managers must direct their efforts towards the goals of their organization. To solve this dilemma many of the most successful enterprises in America, Britain, Europe and Asia have adopted the Management-by-Objectives approach to administration. Details of M.B.O. applications vary from firm to firm, but the basic logic has been applied in such varied industries as hospitals and airlines, as well as in many large and small manufacturing, mining and processing companies. I believe that the simple and compelling logic of M.B.O. is relevant to education and that it could provide the new approach to supervision of teachers which is needed in Australia at the present time.

In this address there is time to describe only the main principles of Management by Objectives. My aim is to stimulate the interest of educational administrators in this approach in the hope that further study and well-planned experiment may be made. To adapt and implement M.B.O. in school systems would need much thoughtful planning and considerable resources. It would be a serious mistake to adopt M B.O. hurriedly in education or to try to impose it from above. But it would also be a serious neglect of opportunity not to examine the promise which this systematic approach may hold for improvement in education.

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[17] Hills, R. J. *Toward a Science of Organization*, Eugene, C.A.S.E.A., University of Oregon, 1968, p.97.

Management by Objectives—Values

Management by Objectives is a system of values or a way of thinking, not a set of techniques. Techniques and procedures are important in M.B.O. but they are useless unless everyone concerned understands and is committed to the values involved. When they succeed, M.B.O. programmes visibly improve the short and long-term results of the firm and the personal satisfactions of the people involved. But M.B.O. programmes fail more often than they succeed because insufficient planned effort is made to get real commitment to the values on which the system depends.[18]

These values are indicated in the following quotations from six authors:

From John Humble:

> 'Performance improves most when specific goals are established.'[19]
>
> 'Each manager is helped to determine what he is expected to achieve by analysing his key tasks and performance standards.'[20]

From Peter Drucker:

> 'To give full scope to individual strength and responsibility, and at the same time give common direction of vision and effort.'[21]
>
> Management by objectives and self control 'motivates the manager to action not because somebody tells him to do something or talks him into doing it . . . but because he himself decides that he has to . . . he acts, in other words, as a free man.'[22]

From David Olsson:

> 'The basic function of the system is to provide a method of transmitting knowledge and purpose to each individual so that all efforts will be uniformly directed.'[23]

From Harry Levinson:

> 'The highest point of self-motivation arises when there is . . . conjunction of the man's needs and the organization's requirements . . . The energies of man and organization are pooled for mutual advantage.'[24]

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[18] Beckhard, R. *Organization Development: Strategies and Models*, Reading, Addison-Wesley, 1969, p.37.

[19] Humble, J. *Improving Business Results*, London, McGraw-Hill, 1968, p.88.

[20] Ibid, p.10.

[21] Drucker, P. F. *The Practice of Management*, London, Heinemann, 1966, p.133.

[22] Ibid.

[23] Olsson, D. E. *Management by Objectives*, Palo, Alto, Pacific Books, 1968, p.3.

[24] Levinson, H. 'Management by whose objectives?' *Harvard Business Review*, July-August, 1970, pp.125-134.

From George Odiorne:

> In M.B.O. 'the superior and subordinate managers of an organization jointly identify its common goals, define each individual's major areas of responsibility in terms of the results expected of him, and use these measures as guides for operating the unit and assessing the contribution of each of its members.'[25]

From Andrew Brown:

> 'If employees are treated as adult citizens . . . they will make the greatest possible contribution to the success of their organization.'[26]
> 'M.B.O. is based on the participation of all managers in the setting of targets and standards.'[27]
> 'In the last resort, all development is self-development.'[28]

Between them these quotations give the flavour of the M.B.O. philosophy of management. There are two fundamental sides to this philosophy, one concerned with rational planned pursuit of objectives, the other with the motivation and personal commitment of individuals. One side leads to systematic cyclical procedures for clarifying the organization's goals, reducing these to measurable objectives for sub-units, and translating sub-unit objectives into specific behavioural tasks for individual persons, so that each person knows what he has to do, what his unit has to do, and what his organization is trying to do.

The other side to M.B.O. philosophy recognizes that the individual's first concern is himself rather than his organization, but that it is possible for the individual to seek personal satisfaction in his organizational tasks. When this condition is achieved the individual and the organization both reach the goals they seek.

This is the simple logic of Management by Objectives. According to Odiorne this way of thinking is especially applicable to professional and managerial employees, and I personally think it is particularly suitable for teachers.

Management by Objectives—Practice

The detail of M.B.O. in practice is beyond the scope of this paper and can readily be found in the writings of John Humble, Andrew Brown and George Odiorne, or in an excellent set of films produced by British Pathe with John Humble. The essence of M.B.O. in practice is a systematic cycle of setting targets and evaluating results against targets.

Target setting begins with the broad purpose or mission of the enterprise. This is translated into strategic key objectives, such as to produce or sell a specified volume of goods this year, to increase the firm's share of the market by one per cent in three years, or to raise return or investment at a specified rate. The strategic objectives are converted into specific operational targets and priorities for each division and successive sub-unit in the firm. Targets are expressed as much as possible in measurable terms and in specified time periods, often six or twelve months. Unit targets become the responsibilities for which the unit manager is to be held accountable. This sequence from enterprise mission through strategic priorities to unit targets ensures that each manager at each succeeding level knows precisely what he and his unit are expected to achieve, and also that each is aware of the part he contributes to the whole.

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[25] Odiorne, G. S. *Management by Objectives*, New York, Pitman, 1965, p.55.

[26] Brown, A. M. *Management Development and Management by Objectives for the Line Manager*, Bombay, Somaiya Publications, 1970, p.63.

[27] Ibid., p.63.

[28] Ibid., p.20.

But there is another side to target setting. The M.B.O. approach recognizes that the company's plan is useless unless managers at all levels put it into action with commitment. Humble asserts that 'their competence, judgement and enthusiasm will determine whether or not the company objectives are met'[29] and that the real use of human beings depends on 'the spark of vitality, challenge and involvement'.[30] Imposing goals from above 'misses the whole human point'[31] and generates a passive cautious spirit of dependence on superiors.[32] Besides, the unit manager can only be held accountable for results to the extent that he controls resources and determines performance in his unit. So one vital part of M.B.O. in practice is the active participation of the unit manager in setting the targets for his unit, in conjunction with his superior. And a second essential issue is freedom for the manager, to the greatest practicable extent, in deciding how his unit will achieve the set targets.

The evaluation phase of the M.B.O. cycle consists of systematic comparison of results achieved with targets set. This comparison is made at regular intervals at each level of the organization. An important concept is that a small number of specific factors can be used as key indicators of performance. Strong efforts are made to evaluate these key indicators as objectively as possible with the help of quantitative measures and qualitative criteria. Frequent feedback on the firm's and unit's performance in the key activities is essential and systematic procedures are established to provide this information continuously to the unit managers. This enables the manager to adjust his methods and resources or even, where necessary, to modify his targets.

The basic M.B.O. cycle of setting targets and evaluating results takes different forms in different firms and industries But usually the cycle begins with a meeting between the unit manager and his immediate superior to review performance in the preceding year or half-year and to agree on targets for the next period. The superior's first concern is what the firm needs and expects the unit to contribute. The manager's concern is to ensure that his personal needs and the resources and capabilities of his unit are taken into account in the evaluation and in setting next year's targets. The M.B.O.

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[29] Humble, op. cit., p.45.

[30] Ibid.

[31] Levinson, op. cit.

[32] Humble, op. cit., p.45.

system presupposes that both parties accept improvement as a value in itself and that some degree of stretch will be built into targets. On the other hand participation of the manager in setting his unit's targets protects him against unreasonable expectations from his superior. One incidental outcome of M.B.O. is transfer of managers from units which are beyond their personal capabilities to tasks which they can handle.

The judgements made on last year's performance and the specific targets and criterion measures set for next year are recorded. After review at higher levels in the organization this record becomes the basis for next year's operations and the cycle begins again.

Management by Objectives usually incorporates explicitly a programme of personal development for each individual manager. In fact sometimes a Manager Development Programme is the first stage towards a total M.B.O. programme. The same cycle of setting targets and reviewing progress is the basis of the Manager Development Programme.

Management by Objectives in Education

My outline of M.B.O. in theory and practice was necessarily brief and I have not touched on problems which arise or on criticisms which have been made of the M.B.O. philosophy. Failures have certainly occurred in practice. Many of the criticisms and failures seem to resolve down to failures of scale in preparation and planning before introduction of the M.B.O. scheme. Given the necessary scale of thorough investigation and resource allocation I personally am convinced that M.B.O. could be adapted to help solve the problem of low productivity in primary, secondary and tertiary education. It could do this without displacement of educational goals and would enhance rather than hinder the professional aspirations of teachers. Increasing productivity in education is not a matter of squeezing more work out of teachers at less cost but largely, I think, of freeing the full latent power of the teachers by fostering the development of a truly professional elite of competent and accountable teachers, and giving these professionals the right kinds of physical, human and organizational resources. The M.B.O. approach could aid this kind of development.

Supervision in Australian education is now in a state of indecision—a period of uncertainty between old and new directions. New exploratory trends are beginning to appear[33] and these seem to have much in common with the M.B.O. aim of meshing the interests of the man and his organization. But the new trends lack the explicit theoretical base and the systematic processes which are needed for effective operation. This, in my opinion, is what an adapted form of M.B.O. could contribute to education—theory and system for programmes of professional growth, for teachers, principals and superintendents in the school systems and for academics and decision makers in tertiary education.

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[33] Williams, J. G. 'School supervision in Australia: An emerging concept', *Australian Journal of Education*, 14, 3, October 1970, pp.325-329.

Conclusion

I suggest that a systematic pattern of joint target setting and evaluation might well be considered at all levels in Australian education as the basis for professional development of staff and planned pursuit of objectives.

In fact something of the joint target-setting approach is already beginning to replace earlier autocratic supervisory practices in the school systems. I see this as a good trend but not a sufficient one. Target setting without evaluating results against targets is not enough, and both must be done by plan and system. Much of what is now happening in educational supervision seems to be unplanned and unco-ordinated. Teachers and principals are being given autonomy of a kind, but a kind which could quite easily lead to dispersion of effort and lower productivity. This is a danger which can arise as the bureaucratic controls are relaxed and power in the schools becomes more widely diffused. I believe that the development of a self-controlling professional force of expert teachers is a necessary prerequisite for improving effectiveness in education. I believe that concentration of resources on clearly defined functions is a necessary prerequisite for improving productivity in education. The problem is to combine professional autonomy for teachers with co-ordinated pursuit of educational goals. My purpose in this paper was to suggest one system of administration by which this might be done.

THE SCHOOL AND ITS LOCALITY WHEN PLANNING FOR EFFECTIVE EDUCATION

COLIN J. BALMER, B.A. (HONS.), ED.D., M.A.C.E.

Department of Sociology, La Trobe University

It has been characteristic of Australian education that the governmental school system has been highly centralized. This has been so much the case that it is not an exaggeration to assert that all initiative has been vested in head office. At best, the classroom teacher could ask questions which were referred up the line. This centralization has concerned all aspects of education. At the present time, however, gentle breezes are stirring some of the dusty by-ways of local initiative that have long been a haven for cobwebs. In recent years—one could almost limit the period to months—there has been a much greater tendency than ever before for the central offices to allow and even insist upon local initiative and decision making.

As these changes have been occurring at the state level the commonwealth government has been edging itself into the scene, with the result that some matters have been taken from the initiative of the states and been subjected to direction from Canberra. Thus the states can receive commonwealth funds for educational purposes if and only if these funds are matched by state money. While the commonwealth decrees how its funds are to be spent, as is only proper, this procedure results in the states being forced to spend their funds in ways not determined by themselves, as is not proper. Thus the opportunities and possibilities have been reduced for the states to implement their own priorities.

This briefly is the present situation. I propose to demonstrate that it is now necessary that the Australian tradition of formulating plans at the centre be supplanted by processes that permit the evolvement of plans at the local level. Then I shall outline the administrative changes that will permit and encourage this local decision making.

Once upon a time, according to one fairy tale, Australians were a homogeneous people. Dennis's Ginger Mick and Doreen, Patterson's Clancy, Lawson's Drover's Wife and The Women of the West portrayed by Evans were the epitomes of all Australians, regardless of whether they hailed from Dad's Selection or worked in the dingy offices that once housed The Bulletin and slept in the warrens of Erskineville. To the extent that all Australians were alike so there may have been some substance to the view that all Australian children in the same state needed the same basic education.

However, if those days really did exist, they have now gone forever, thanks to twenty years of mass migration. During these same past two decades sociologists have been devising and perfecting a means of describing the heterogeneity of the population of any area. Although people possess many characteristics, three have proved particularly useful in categorizing the population in ways that are sociologically meaningful. They are social class, familism and cultural background. Social class or, more accurately, socio-economic status, is indicated primarily by occupation and educational level. Familism is indicated by measures that reveal the number of children, the number of single adults and the number of aged persons living in an area. Familism is high if there are few single adults and few aged persons but many families with children. In Australia there are at least two indicators of cultural background. Religion, most noticeably the differences between Jewish and Christian, and ethnicity: Old Australians or New ones. An area is low on the ethnicity scale if most of its residents were born either in the United Kingdom or in Australia of British stock. It should be noted that the measure does not discriminate between types of migrants. Hence an area with many Maltese will not be distinguished from one with many Greeks: both will simply be high on the ethnicity scale.

Although there could well be other equally important variables, data which would enable their being tested are not readily available. However, when these three variables are categorized in terms such as 'much above average' or 'fewer members than average' it is found that the families of an area tend to be similar to one another on each of the three variables. Localities thus tend to be homogeneous.[1] Thus one might find a locality that is of high social status, low ethnicity and average familism, in contrast to another where familism and ethnicity are both much above average and social status is quite low. These homogeneous areas can be mapped. The result, for Melbourne, is a map showing twenty different types of social areas—there may, of course, be several localities of any one particular type.[2] Of course, just as blue ribbon Liberal seats like Higgins in Melbourne, or Curtin in Perth, have their supply of non-Liberal voters, so social areas have their residents who are different from the majority.

If a city like Melbourne can have twenty different types of population groupings within it, then it ought to follow that we need more than one—in fact several different types of education. Why? Because in my opinion viable education must work from where the pupil now is towards the goal—regardless of what that goal is. While Australians are now realizing that there ought be a multiplicity of educational goals, for too long our planning has been based on the premise that if X is the goal, what prerequisite does the goal imply, what are the prerequisites for the prerequisite, and so on. A case of walking downstairs backwards. Steps are usually nice and square. Children, especially younger ones, tend to be rotund. Some round pegs fitted loosely in the pre-cut, centrally-planned square hole that was our classroom and its curriculum. Others of those round pegs took quite a bit of pushing to get into the hole. Some, unfortunately, couldn't be made to fit at all.

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[1] Strictly speaking, these measures refer to census tracts. However, in general the census tracts that comprise a locality do tend to be similar.

[2] Jones, F. Lancaster *Dimensions of Urban Social Structure*, Canberra, Australian National University Press, 1969.

This College has on many occasions stressed that we need to educate 'each to his full stature'.[3] For most children this can best be achieved by beginning with the child as he is, not as some programme say he ought be. We can all imagine the differences that separate the child of an Old Australian professional from that of the migrant labourer. What we don't always heed is the fact that the migrant child from Southern Italy is different from the Italian child reared in Milan. Or, as my local fish-shop proprietor expostulated, 'I'm not Greek—I'm Macedonian'. The Italian child from Milan is used to the ways of our industrialized, urban society with its insistence upon time, money and contractual obligations. He needs a different educational programme from our Macedonian child to whom cars, telephones and the like were probably awesome things and for whom the rhythm of life had been the natural one of the sun and the seasons. It is impossible for any centrally devised curriculum to cater for diversities such as these. Only the teachers on the spot can do so. Yet I am of the opinion that the majority of teachers are unable to plan an effective curriculum on their own.

The reasons for this statement lie in the factors which have given rise to the middle-class bias to the curriculum. There are three aspects to this problem. Firstly, there is the reality of the different ways of life for each of the socio-economic groupings. These can be symbolized in a number of ways—from the overalls in the wash in contrast to the suit at the dry-cleaners to the home as a show place with neatly trimmed lawns in contrast with it being regarded merely as a utensil that is mended only after it ceases to be serviceable. As the differences in life style become more marked it is more difficult for the teacher to comprehend the way of life of his culturally different pupils. This fact becomes exacerbated when we recognize the reality of the second point. In the larger cities, at least, there is a high probability that the teacher does not live in the same locality as his pupils. Hence he has no first-hand experience of the sounds they hear or the sights they see in their locality of an evening or a weekend. Thirdly, teachers seem to be more isolated from the world of the market place than are other occupational groups. Many times, at parties and in clubs, I have seen groups of people chatting together. While accountants and builders, mechanics and salesmen intermingle and talk about cars or fishing or politics, it is rare to find more than the occasional teacher participating fully with them. More frequently, teachers form their own huddle and talk shop. I don't know whether or not this is because a teacher's entire working life has been associated with the classroom. It does seem to reflect the lack of a meaningful appreciation of that which makes up the real world of their pupils.

As a consequence of these factors, teachers may lack a knowledge of the world of some of their pupils. Consequently, they frequently do not understand particular pupils and are unable to effectively communicate with them. The result is a clash of personality and a frustrating relationship for both teacher and pupil. Leila Berg's story of Risinghill is a classic example of this point.[4] At a more general level, there is lacking an experiential basis in which to ground lessons so that they become relevant to the pupils. At worst, the teacher draws on his own different experiences and bases his lesson on them. At best he will ask questions of his pupils—but from his perspective, not theirs. The answers may be unhelpful perhaps because the surface features of the question are responded to, and not the implicit meaning of the question.

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[3] This has usually been interpreted from a psychological framework, encompassing differences in emotional, temperamental and intellectual characteristics. In this paper I intend to operate from the perspective of the sociologist and assume that children have different socio-cultural backgrounds which will impinge upon their growth towards full stature.

What I am suggesting therefore is that in curriculum planning in each school there is a need to include representatives of the parents and citizens of the school locality.

It is easy to say 'include representatives'. The difficulty lies in the implementation. We all know how few turn up to the usual sort of school meeting. What do sociologists know about this?

To over-generalize, people can be divided into two groups — those who don't and those who do attend formal meetings. To continue over-generalizing, those who don't usually come from the unskilled occupational groups whose verbal skills are different from ours. Those who do join organizations can be divided into three groups, which very generally, follow socio-economic divisions. Firstly, there are those whom we might describe as working class and who tend to join committees that are focused on the neighbourhood. Pre-school committees and mothers' clubs would be lost without them. As social status rises, so there is a tendency to join clubs that service a wider area—perhaps the whole suburb, or two or three, or even the entire local government area. The service type clubs are one example. Thirdly, when we reach the professional level of occupations, there are those who devote their energies to organizations which are metropolis-wide in their orientation. I repeat that I am over-generalizing for the sake of clarity.[5]

What this suggests is that those who will automatically interest themselves in our schools come from a very narrow band of the social spectrum. No value judgement is intended, for there are many reasons for the different behaviour patterns that people have. However, we need to make a broader appeal, and perhaps we may need to approach the different types of organizations for representatives. If we sample the organizations well, we will, I believe, get a fairly representative cross-section of the public that any particular school serves.

I realize that such a procedure will not tap that section of the public about whom we *most* need information: the non-joiners. Frankly, at this stage of educational planning with the public, I would ignore them. By that I mean be neutral—send them invitations, but not be concerned when they don't turn up. However, do NOT close off the options so that their children get forced into learning situations that are incompatible with their needs.

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[4] Berg, Leila *Risinghill*, Harmondsworth, Pelican, 1968.

[5] These comments have drawn on:
Hagedorn, R. and Labovitz, S. 'An Analysis of Community and Professional Participation among Occupations', *Social Forces*, 1967:46 pp.483-491.
Martin, Jean I. 'Suburbia: Community and Network', pp.301-339 in Davies, A. F. and Encel, S. (Ed.) *Australian Society: A Sociological Introduction*, 2nd edition, Melbourne, Cheshire, 1970.

More importantly, *seek* ways of meeting such parents. Drink at the local pub, send your wife to the local laundromat and so on.

Their way of life is *different* from ours, not necessarily inferior. Our different, more fluent, more expressive verbal skills often create in them a sense of inadequacy and so we threaten them. This is especially so in formal types of meeting. Hence, if we can establish contact in informal ways, and learn their views and ideas in that way, we will still have achieved our basic purpose. As we outline our overall plan to our lay advisers, they have both the opportunity to question us—and so force us to clarify some of our ideas that are only half thought through—and also to fully understand our intentions. Parents are then in a position to be helpful by suggesting alternative approaches and examples that will enable us to achieve the same goals by a different route—one which will be meaningful for our pupils, rather than remaining stuck in the preformulated groove from which we began.

I wish to make it quite clear that I am not advocating that these lay advisers be given any control over the curriculum or lesson planning. This must remain the privilege and right of the teacher. My contention is that when the curriculum of a school or a subject is planned, the social backgrounds of the pupils must be taken as a point of origin. In determining this point, the teacher will find it to his advantage to draw on the knowledge possessed by the citizens of the school district. There will be a multiplicity of perspectives presented to the teacher. He, in the light of his capabilities and experience, will construct what seems to him to be the most viable curriculum for the circumstances.

I realize that this is a radical suggestion. I was appalled to learn just how radical when I analyzed the results of a small survey of teachers in Victorian State schools which I conducted last year. One of the questions asked 'How often do you contact parents about pupils who have *learning* problems?' Two-thirds replied that they never did so, or did so only in extreme cases or did not usually do so. The same percentage, although not necessarily the same people, reported that their only contact with the parents of average pupils was via the term or half-yearly report or the formal parent-teacher night. In other words, two-thirds of the teachers I polled do *not* engage in meaningful contact with parents about the one topic they have in common: the education of a particular child, even when that child is having difficulty in learning. If teachers show so little interest in the pupil, can it be wondered that the parents show little interest in the school? I cannot imagine a more unpromising position from which to begin a program of local involvement in school planning!

To this point I have emphasized citizen involvement in curriculum planning because I believe this to be an area in which we tend to regard ourselves as the knowledgeable experts not needing advice from others, especially if those others are 'outsiders'. However, local residents and officials can be helpful in other areas of educational planning. At the present time my children are about to enrol in a newly-built state school. It is identical with a score or so of new schools built in the Melbourne area over the past couple of years. What makes we local residents cross is that in our suburb most of us have tried to preserve the natural look of the days before the onslaught of suburbia. Our new school is pure suburbia—the educational equivalent of a triple-fronted brick veneer with wrought iron trimmings. Yet, living nearby is one of Melbourne's leading architects who specializes in blending his structures with their environment. He would willingly have spent as many hours as were necessary to help modify the design so that the school would have become part of the bushland setting.

It is recognized that questions of economics arise and that departments must watch their cents. Yet it would have been nice to think that alternatives could have been considered—even in respect to the siting of the building, or the layout of the school grounds.

Perhaps there may be reasons why local residents could not be consulted, but one would think that local councils could be advised. Even this does not currently occur. Those of you from Melbourne are no doubt aware that the Housing Commission erects blocks of flats twenty storeys tall, without any provision for extra classrooms being made by either the Commission or the Education Department. In the case of our new school, I live one hundred yards from it. The children who live on the other side of my back fence have three-quarters of a mile to walk—simply because there was no local involvement when two subdividers made streets and the Education Department bought the parcel of land that was made available to them.

These examples lead me to believe that there is a case for local planning with respect to the bricks and mortar aspect of school facilities. Going beyond this, we are all aware that parents have been expected to provide many of the facilities that are found within schools: library books, television receivers, movie projectors, maps and so on. Often the cost of these has been subsidized by the state government on a reimbursement basis. The inequities of this system have at last been recognized in Victoria at least, and now schools receive a quarterly grant, based in part on pupil enrolments and with no proviso that the parents must raise any particular proportion. School committees have been told that they can spend this money in any way that is educationally beneficial provided only that the regular commitments like telephone bills and minor repairs are met. This has resulted in increased flexibility, increased efficiency and increased economy. In fact, one of the main problems that some committees have experienced is that they are unable to get their *teachers* to plan ahead. That is, the committees have a reasonably sound knowledge of their financial resources. They wish to spend them wisely. Yet when they request from their teachers a list of requirements in the teacher's order of priority, they are ignored. Once again I am led to ask who is responsible for parental apathy—the parents or the professionals.

To the extent that the parents do not respond when given the opportunity (and let me emphasize that some teachers and schools do strive to foster parental participation) one must enquire are the opportunities meaningful? Those schools where funds raised by parents are spent by the teachers on a myriad of small invisible items soon lose their support. Those who blend larger items with small ones, even where the process of turning single dollars into hundreds is slow, seems to retain their support, for the parents see something for their efforts. The product is visible, and so the persons who authorize that expenditure become visible. In our society it is important to have the power to spend money. For this reason I am vitally interested in the long-term effects of the amendments to the Victorian system. One would expect more competition for the positions on school committees as a result of their increased power.

To the extent that the lack of parental interest lies in the teacher one must ask why do teachers not seek parental help and advice. There are undoubtedly several reasons, but among them is probably the point that most teachers are idealists, aiming to achieve the ultimate in pupil development with every pupil. Since few of us can attain this goal with more than a handful of pupils during an entire career, we tend to recognize and magnify our shortcomings. Under these circumstances, parents represent a threat to our self-confidence and security. They don't know that we have tried our best.

Ultimately, part of the solution must be found in better programs of teacher education which foster better expertise and also a teacher's sense of self-confidence and sense of personal worth as well as providing him with the ability to communicate with the parents. In the interim, it will be necessary that school administrators provide moral support to the teachers. Let both teachers and parents know that we can't all be perfect. More importantly though is the need to change our attitudes: instead of posing as all-knowing and completely effective teachers, we need to approach parents as seekers of information about the pupil, information which will facilitate our teaching of him—to foster the approach that we are partners each with our own part in the educational process.

This type of approach that I am advocating implies that we must specify clearly the sort of help we want from our local parents and citizens. In the areas of our professional expertise, such as teaching method, or modes of maintaining classroom discipline, or selecting the content of specific lessons, the teacher must remain the unchallenged authority, and lay committeemen must defer to the professional. Parents and others can contribute much to the educational process by merely discussing freely their children and the hopes and aspirations they have for them and by talking about their everyday lives. Much of this information can best be obtained informally.

The administrative processes by which local citizens can be involved in providing and planning for effective education, are of three different levels —(1) leading to an understanding of the individual pupil, (2) assisting the specific school, and (3) approaching education from a regional perspective. With regard to the first of these—the level of the individual pupil—I have long advocated that at least one of the pupil's teachers, perhaps the home room teacher, ought meet the parents in their home about the same time that close relations are established with any particular pupil. Thereafter regular contact ought be maintained.

I have two reasons for insisting that these contacts ought be in the pupil's home: firstly, we can glean much information merely by looking about us: cleanliness and tidiness, affluence, books and artifacts and so on. Further, and equally importantly, we're on their home ground and, I believe, are therefore more likely to meet them in a relaxed manner. Parental comments and questions can be better interpreted with an appreciation of their situation. The teacher, too, can ask his usual questions in ways that add to the meanings gleaned from his observations while his usual questions will be supplemented by others prompted by these same observations. As the contacts continue during the course of the year I envisage the development of a complete two-way dialogue as parents and teacher each share information about the growth of the pupil.

Recently I have learned that Victoria's Maryvale High School has developed a variant of this type of program. One attempt to bring non-participating parents 'into contact with what (Maryvale) school is thinking and doing' began with a parent who invited some friends and the principal and senior mistress to an evening at her home. 'There in an informal way, parents and teachers met. The main ideas of the school were brought up and discussed. Parents were able to ask questions freely.' This successful first house-meeting was followed by others and 'over 130 families' have been involved. 'It is felt that these house groups are an important aspect to the life of our school. There are several reasons for this conclusion:

- Parents meeting with members of the teaching staff and each other in a small group feel more ready to discuss any problems.
- Parents who have not previously visited the school feel more ready to do so.
- In many cases the child reacts in a favourable manner after parents have been involved in house groups.'[6]

At the level of the individual school there are two aspects to planning: the particular courses offered within the school and the overall orientation of the school. Irrespective of the manner in which any school is organized and of its overall bias or orientation, teachers who have something in common—they may teach the same subject, or the same group of pupils, or the same age or form level—ought join with parents, citizens and representatives of organizations in the locality to create a committee. The program that I envisage is for the teachers to outline their tentative curriculum, making explicit their objectives, their underlying assumptions and their overall programme. The lay members would react to these proposals with general discussion, questions and suggestions. Hopefully the meetings would be of an informal nature. Probably they would only need to be held three or four times a year—but the first of these, obviously, ought take place VERY early in the school year.

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[6] Quoted from 'An Account of Parent Involvement and Practices at Maryvale High School', Victorian Education Department, Curriculum and Research Branch, September 1970 (AC.70/124 (C. & R.)), pp.29-30.

[*] To this point I have used the term 'local' to refer to the area served by a school, be it primary or secondary. Hereafter, the term also refers to a local government area. I use this term in a practical sense, since it refers to an administrative unit we understand. However, it may be more practical for the local government area to contain more than one local education area.

The result of the types of parent-teacher contact that I have been outlining will be a public *informed* about what the school is attempting, why it is doing so and the resources that are available for the implementation of the programme. From time to time it may be advisable to hold a general meeting of parents and teachers to review the goals of the school and its success in attaining them. Consequent upon such meetings it may be worthwhile codifying the goals in a simple brochure about the school for new teachers and parents.

The type of parental organizations that are already functioning for each school, should have their tasks made easier by the existence of an informed public. The needs of the schools will be known, as well as the priorities for these needs, and, something often lacking at present, there will be a knowledge that the equipment provided will be used. These committees in conjunction with the principal would have control of funds for their own schools.

At the present time, few school committees can raise the cash needed by their schools. Any form of voluntary contribution scheme seems to run into a few simple problems. Some parents forget to contribute, and there is no effective way of making them remember. Others of them ask 'Why should we?' A minority genuinely cannot afford to. Two of the results of my survey surprised me. One was the near unanimity expressed by teachers that local government rates should be raised to provide additional funds for education. The other was the view that the local council has a positive contribution to make in educational planning for both specific schools and for the council area as a whole.

As most of you will realize, one objection to the use of local government rates for educational purposes is that childless and absentee property owners object to it as they derive no direct benefit from it. When it needs to be increased they often exert pressure to ensure that the increase is minimal rather than optimal. I believe two steps can be taken to overcome these objections. Firstly, I see no reason why this type of rate should not be levied on occupiers rather than property owners. Admittedly there would be administrative difficulties but surely, if we can levy a dog licence fee we can strike an educational rate on residents. Secondly, does 'educational' need to be synonymous with 'school' and, regardless of the answer to that question, must schools be limited to use by teachers and pupils for merely thirty hours a week? In both cases, I believe the answer is 'no'. Our schooling facilities *are* in a parlous condition but many of these same facilities could be available to the general public outside school hours. Schools and councils both raise funds to service separate libraries, sports fields, public halls and so on. While it is nice to have your own, surely it is wise to rationalize one's needs when one is poor. Hence, why don't we so plan our community facilities that duplication is avoided enabling the 'spare' funds so created to be used in other ways. Thus the state government might provide library space in each school, but the council

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provide the books—for children, the teachers and the general public. The parents, instead of buying library books could easily find other uses for their funds, such as free educational tours or additional audio-visual equipment.

If these comments amount to little more than common sense, let me jump into a more controversial topic. I would not limit this educational rate to state schools, or to projects that would mainly benefit state school pupils. My suggestion is that this rate would be controlled by a special Local Education Committee responsible to the local government authority.* Its membership would consist of such people as councillors (representing the council and ratepayers), educators (from both inspectors and schools) and school committees. Other groups (such as the Chamber of Commerce) might also be represented permanently. Other members could be co-opted as necessary. This committee would be charged with planning the overall educational development of the local government area. It would, in this respect, co-operate with the regional planning authority in the location of such facilities as schools and recreation grounds that pupils would use intensively during the week. It would co-ordinate the programs of the various schools so that there was some balance between the wishes of the parents and the courses and types of school available.[7] Also among its tasks, probably its most important, would be the disbursement of the funds raised by the educational rate. To be effective in this role it would need to establish overall priorities for the entire local government area. As a result, if it considered that the most urgent priority lay in the provision of some facility at the local catholic school—then that is what is first provided.

My colleague from La Trobe University, Professor Goldman, has asserted that Australia's education is the world's worst. I believe he is correct. Therefore, the time has come to forget differences and get on with the task of revitalizing the set-up. The facts of the situation are such that we cannot afford to do without either the classrooms of the non-government schools or their teachers. As their pupils are little Australians, too, we must take those steps which will most quickly yield excellent education for all. In most cases this will be achieved by improving existing structures —not by destroying them or ignoring them.

It is sometimes claimed that the existence of the independent schools diverts those parents who are influential and able to express themselves away from the state system, to the detriment of the latter. As there is undoubtedly some truth in this, I see no reason why their educators and parental associations should be disenfranchized from the Local Education Committee that I have proposed. Furthermore, if the facilities of some of these independent schools are as excellent as is claimed, then they would derive little direct benefit in the immediate future from the suggested educational rate. Certainly they would share in the overall facilities that are provided from it for the community. In a long-term perspective, once all facilities have reached somewhat similar standards then they too would find some of their needs being accorded high priority by the Local Education Committee.

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[7] As an example of what I envisage here—a minority of parents might want a 'Summerhill' type school, while a majority might want practically oriented vocational type schools. Left to themselves, each school might try to meet the latter demand, since it would meet the wishes of the majority. In this sort of situation the Local Education Committee would plan one suitably located school as a Summerhill type, and remove zoning restrictions so that all who wished could attend the type of school of their choice.

The suggestions that I have made to this point are, I believe, implementable now. Some teachers already make a point of knowing the families of their pupils. Some schools already involve their parents in overall school planning. Regional committees (although not under the aegis of the local government authority) have functioned effectively at different times. All that is needed is the willpower of teachers to get them underway. The success of the examples of which I am aware and the flood of letters to the press on educational matters suggests that the parental response will be gratifying.

Ultimately, I would hope that the Local Education Committee could be delegated much of the work of the state department of education with respect to day-to-day planning and administration of education within the local government area. This, of necessity, would mean the disbursement to the committees of the funds necessary for this purpose. While this disbursement should in principle be on some basis such as so much per pupil within the local government area, compensatory grants would need to be made to Local Education Committees with particular problems, as in the inner city suburbs where the return from any rate might well be low in comparison to the state average. Whether such a compensatory grant should come from the state or the commonwealth is a point which need not concern us.

Obviously there are a myriad of practical problems involved in the implementation of the ideas I have outlined. Some of these problems are minor in nature and can be overcome easily if we so wish it. Others of them are quite fundamental. It has been my intention to be provocative, my aim will have succeeded if you now begin to debate these issues among yourselves and seek answers to the questions and problems I have indicated. Your answers may not be the same as those I have suggested—that matters little so long as they are answers. After all, as a critic it behooves me not to merely belittle and denigrate but to also offer some alternative. My suggestion is but one and there are undoubtedly several other possible courses of action.

At the present time there are two opposing trends. On the one hand, the state governments appear to be moving in the direction of decentralization. In New South Wales there is a government department for this very purpose. In Victoria there has been the delegation of increased responsibility to school committees and an election promise of regional offices for the department. Opposing this trend is that of the central government to extend its powers and to consolidate within Canberra those which it has long held. Clearly, in the mass urban society of today many aspects of life that were once purely local are now of national significance. Hence it is understandable that the central government does and perhaps should become involved. In doing so, however, I believe it must search for approaches that do not stultify the localities. Rather, it is essential to the national interest that some way be found to overcome the anonymity that many authorities claim characterizes mass urban society. One step in this direction is to foster processes that enable citizens to identify with a locality. I believe that the processes I have outlined for local involvement in educational planning would provide this sense of identity for our citizens and simultaneously increase the effectiveness of our educational system.

CREATING CLASSROOM CLIMATE BY INFLUENCING NORMS—AN APPROACH TO EDUCATIONAL PLANNING

REV. KEITH D. PEARSON, B.ED., M.A.C.E.

Director, Board of Christian Education, Melbourne

ARGUMENT

The word 'climate' when applied to groups which meet for learning or other tasks attempts to describe the 'milieu' or internal environment and will do so in terms of categories such as: safe or threatening; open or closed; collaborative or competitive; self-directed or other-directed.

Learning climate is largely determined by 'norms' or expected patterns of behaviour as perceived by members of the group. Norms of one sort or another will emerge for good or ill in every group; they make for the possible enhancement of learning, or they obstruct learning and growth.

The wise teacher will take the trouble to analyze the climate of his classroom and seek to identify the operating norms and assess their value in relation to his goals for the class. Norms can be changed, and the best way is usually as the teacher himself sets a model and demonstrates the values he espouses in his own ways of working with and relating to the class. Much educational planning takes into account structures and programmes and omits this very important part of planning for improved learning.

As well as working to establish a growth-inducing climate, it will, of course, be necessary to provide for a variety of learners. Some will be able to take more initiative, others will be more dependent on authority, at least for a time. This paper analyzes a variety of climates and norms and makes suggestions about planning to create them.

PERSPECTIVE OF THIS PAPER

An area of study which has emerged since the second world war has come to be known as Applied Behavioural Science. It is an interdisciplinary field, drawing on insights of education, psychology, sociology, religion and other disciplines related to what are sometimes called 'the helping professions'. For some, Applied Behavioural Science is best known for its work in the field of human relations, particularly in sensitivity training through 'laboratory method'.

In its broader contexts it includes research, experiment and interventions in planned change strategies for persons, groups or organizations. Amongst the categories which have developed for the analysis of interaction in groups and emerging structures are those of norms and group climate. Their particular relevance to the classroom and other milieus of teaching and learning will become apparent.

ANALYSIS OF GROUP AND INTERPERSONAL RELATIONS

The field of study may be illustrated by an analogy proposed by Jack Gibb.* Imagine yourself coming to a new class and having with you a photograph of the class at work. You will be able to make some provisional inferences about class structures and interaction. From facial expressions, you may infer something about level of motivation of the pupils, from glances being exchanged between two pupils we may infer something of attitudes to each other, from bodily postures an atmosphere of tension or relaxation may be inferred. If a moving sound film were available, considerably more information would have been available. Such categories as forces, structures, interaction patterns and related factors are the concern of Applied Behavioural Science.

NORMS

Norms, unwritten standards for conduct, or 'ground rules', will soon begin to emerge in any group of people, large or small. For example, a norm seems to exist regarding the seat the passenger chooses in a taxi—a man alone sits in front next to the driver, a woman alone in the back, two persons of whatever sex in the back, etc. This is not a matter of regulation like driving on the left, using safety belts, etc., or a habit which varies from person to person. It may perhaps be seen as a 'group habit' extending the concept from an individual's personal habits to characteristic practices for a group—usually followed, sometimes violated, but common enough to form a basis for prediction. We are getting close to it if we describe a norm as a shared expectation of what members of a group should do, perhaps even of how they should feel or what they should think.

(It would be a useful activity at this stage to identify norms for some of the various groups to which the reader belongs, since the skill of recognizing norms is an important one in those who would participate in planned change.)

SOURCE OF NORMS

At times norms seem to emerge in a way which is unplanned, almost spontaneous. A group of housewives meeting more or less regularly over a cup of morning coffee may soon develop a norm about what sort of conversation is acceptable, what gossip is 'in bounds' and what is excluded. Or neighbourhood couples meeting in each others' homes from time to time will develop norms about what level of intimacy is appropriate, and with whom (handshakes, pecks, hugs, etc.).

Past experience and conditioning of members will, of course, be very influential in determining which norms emerge. In some groups there will be almost unanimous acceptance of the appropriateness of some actions and responses or the inappropriateness of others, described in some circles as good or bad form. Members of a group bring expectations which are

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*Dynamics of Instructional Groups (Chapter VI in *59th Yearbook of National Society for Study of Education 1960*).

already so widely shared that they become the norms of their group. They are likely to remain so, perhaps never verbalized, but still determinative of conduct until they are brought to consciousness by being violated or challenged.

In many cases, expectations of members of a new group will be varied, at times in conflict. It may take a long time for norms to emerge, and then they may still be tentative and represent the influence of a strong person or sub-group more than group consensus. This is to pass no judgement on the desirability or otherwise of the emerging norm—it is more an attempt to identify its source.

It is apparent that the centres of power and authority in a group, whether designated leadership or emergent power figures, have a large say in which norms emerge. Thus not only the teacher but individuals and sub-groups in a class can exert strong formative influence.

It will also be apparent that in our situation, teachers can assume quite erroneously that their values and the related norms they espouse are obviously right and therefore accepted by their class (and all sensible people). It is all too easy to minimize the effect of other norms within the group, moving in other directions, at times directly opposed.

CLIMATE

Rather than proceed by way of formal definition, let us approach the concept of climate by illustrating it in the life of typical groups.

When I enter a group, I come with some basic questions to which at least some tentative answers can usually be given even after a short period of interaction with other members.

What is the group's attitude to change? Is it a group which encourages its members to think and innovate or does it prefer conformity and staying with the safe and acceptable?

What is the group's attitude to openness and experiment? Can one take risks in terms of revealing himself and trying new behaviours or does suspicion, distrust or threat act as a deterrent? How are deviants treated? What sorts of behaviour are rewarded, and what sorts punished by the group? Can members count on support from others in carrying through projects or is there a competitiveness which is reluctant to let others get too far ahead?

What is the group's attitude to itself? Is it marked by defensiveness or a tolerance of evaluation and self-criticism?

Answers to these questions supply information about the climate or atmosphere of a group. Even a well-trained observer may have difficulty in analyzing. Climate is largely a matter of feeling responses induced by the group life and interaction rather than specific definable cognitive descriptions. Its reality and power are none the less—perhaps even more because of the large measure of affect. Feel, atmosphere, emotional tone, climate; these terms are roughly synonymous as descriptions of this aspect of group life.

When we speak of climate, we are not necessarily talking about the values espoused by a group—we are talking about the actual, not the ideal. Indeed, assessment of climate may be a pointer to the operative as distinct from the stated value system by which a group operates.

We may be getting nearer the concept of climate when we see it as a cluster of norms which have emerged and can lead to such general descriptions, on the one hand, as open, trustful, growth-inducing, supportive, or on the other hand as closed, suspicious, defensive, competitive.

EFFECTS OF CLIMATE ON LEARNING

Jack R. Gibb,* in an article 'Sociopsychological Processes of Group Instruction', identifies poles in what for him is the most critical dimension of climate in teaching-learning groups, viz., support as against defensiveness. A supportive climate, he asserts, is conducive to a reduction in defensiveness and an increase in many dimensions he values for the learner:

- more initiating behaviour
- more growth
- more catharsis
- more perceptiveness
- more acceptance and empathy.

By contrast, a defensive climate results in:

- more defensiveness
- more responding behaviour
- less growth
- less perceptiveness
- less empathy.

FACTORS CREATING CLIMATE

Climate evolves from characteristic behaviours or norms in the groups. Gibb suggests, for example, that four contributing factors to a supportive climate may be identified as:

- shared problem solving attitude
- acceptance
- empathy
- sensitive listening.

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*Article in *Human Forces in Teaching and Learning* (Ed. Bradford), N.T.L., Washington, D.C., 1961, 3rd edition 1968.

On the other hand, behaviours likely to produce and heighten a defensive climate are:

- advice giving
- defence
- controlling
- censoring
- persuasion
- punishing.

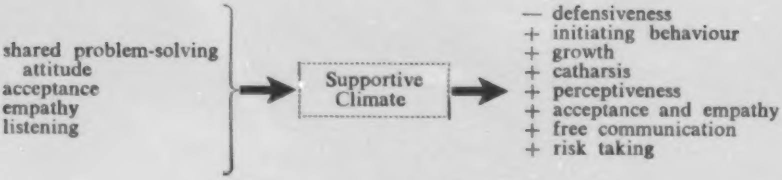

FIGURE 1—The Supportive Climate*

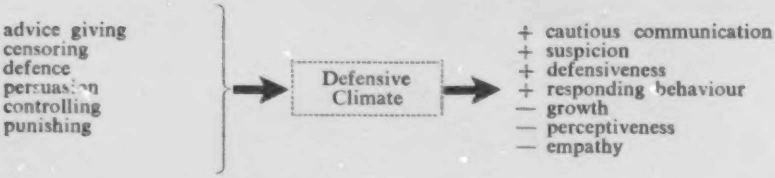

FIGURE 2—The Defensive Climate*

We have used the term characteristic behaviours. Another approach is to look for norms that have emerged with respect to each of these. We ask, for example, has a norm developed about what response is most appropriate to a member's stating of a personal problem—will others help the member to identify and clarify the issues and seek alternative solutions, or will they rush in to give advice and tell him what to do? Amongst other possibilities is, of course, the fact that no norm has developed about this question—either it happens so infrequently or the group as a whole is indifferent to how it is handled.

It is all too easy for a classroom to slip into a climate or atmosphere we have described as defensive. Gibb's comment is still relevant:

> 'Because of the nature of our classroom activities, most teachers tend to engage engage in a considerable amount of persuasional activity. They give advice, control the activities of the students in many ways, try to subtly influence, to persuade and "guide" the

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*Based on Gibb, J. R. *Factors Producing Defensive Behaviour Within Groups, IV*, Ann. Tech. Report, Office of Naval Research, Contract Nonr-2285(01), November 15, 1957.

behaviours of the students who come under their tutelage. Less subtly, the teacher may use punishment, evaluation, and censoring as mechanisms for keeping the class in line. These behaviours tend to produce similar behaviours in the class. The total end product of these behaviours is a defensive climate. This persuasional and selling climate is characteristic of our culture and tends to be carried over into the schoolroom. The dynamics of competition for extrinsic rewards are such as to produce defensiveness. Most of the strains of the schoolroom tend to produce defensive climates. The teacher is usually under strong pressure from within himself and from those administratively above him to cover a certain amount of ground, to mould the students in certain prescribed patterns, to reward what is accepted as good behaviour, to guide and counsel students who deviate from accepted patterns of behaving. By administering extrinsic rewards for conforming behaviour and by attempting to control the behaviour of members, the teacher inevitably builds resistance and defensiveness in the classroom.'*

OTHER POLES TO CONSIDER IN DESCRIBING CLIMATE

In some ways, the dimension of supportive as against defensive climate can be said to be the basic and determinative one. Some other related dimensions deserve study as well. These have variously been described as safe (for risking new behaviour) as against threatening, open as against closed, collaborative as against competitive.

Increasing attention is being given to yet another dimension, that of self-directed as against other-directed learning as the major focus. This has to do with the observation that many classroom procedures result in the learner's remaining too dependent on the teacher and for too long. It holds up the ideal of the self-directed learner, increasingly able to diagnose his own learning needs, to discover resources to help to achieve his ends and to be able to move through a variety of postures, sometimes dependent on an expert whose help he values, at other times taking the initiative himself or with a small group with similar interests.

CONFLICT OF NORMS

People owe allegiance of one sort or another to many groups and this inevitably leads to a conflict of loyalties. For example, in the case of a school child, it may be between what mother wants, what friends want and what the teacher wants. Each group will have norms it wishes to impose. One attempted solution will be for the person concerned to operate by the norms of the relevant group at a particular time, but conflict cannot so easily be avoided.

There is the familiar phenomenon of the pupil who wants to co-operate and contribute to the class activity (the norms the teacher would espouse) but who faces ridicule from class members who label him a 'teacher's pet'

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*Gibb, Jack R. in article 'Sociopsychological Processes of Group Instruction' in *Human Forces in Teaching and Learning*, op. cit.

or in today's jargon a 'conshie' (short for conscientious, perhaps) for violating their norm that 'too much eagerness from one or two is undesirable as it leads to greater pressure on the others to produce'.

This may lead to abdication to the pressure of the group in many instances, although it is possible, where the person is strong enough, that he may react more creatively and become an energy-exerting influence on one group in the light of the wisdom he has learnt in other places.

Situations of conflict are so common in the classroom as to suggest that this is one area deserving serious attention from teachers who would plan to change to a more growth-inducing climate.

SOME DESIRABLE NORMS

What norms are most likely to lead to the growth and development of the learner? The answer to this question will depend on one's value system and philosophy of education. It is a useful exercise to try to express in the form of norms the conditions which would be seen as approaching the ideal. Here are some for a start:

About initiative

Whilst the teacher, because of his knowledge, experience and teaching skills may be expected to take a major initiative in the selection of content and the proposing of procedures, suggestions from class members are welcomed, taken seriously and where feasible are tried out.

About communication

Whilst at times the flow of conversation will be directed to and from one person (teacher or other in a presenting role), there will be freedom to communicate laterally between class members, still in an orderly manner.

About the appropriateness of different ways of working

It is recognized that there will be differing levels of dependence/independence, initiative, etc., among class members and different ways of working appropriate to individual needs and state of growth are acknowledged and respected.

About responsibility for choice

The learning community, teachers and pupils together, will hold up to each other the possibilities and advantages of changed behaviour, but will respect the individual's right to make his own choice—as far as possible, and where the rights of others are not infringed.

About dependence

While dependence on authority figures and familiar structures is often appropriate, members are encouraged to grow in independence and in taking responsibility for their own learning, while recognizing the interdependence of class members on each other.

About deviant behaviour

The class is tolerant of deviants in its membership and increasingly able to assess whether occurrences of deviation are due to individual differences, innovation and risk-taking, or desire to disrupt (or, more likely, a mixture of these).

There will not be agreement on all the above. This is not important. Indeed the above examples probably reveal something about me and my current responsibilities in educational activities of a particular sort at adult, rather than at child level. My point is that there is value in making explicit what often is not openly recognized.

WAYS OF INDUCING NORMS

How can one begin to influence norms already established and work towards the adoption of others considered more desirable?

An important first step is to identify the operant norms. This may be at first the responsibility of the teacher, but it will be important to check perceptions with members of the class for their accuracy. Hopefully, especially with older children and adults, it is an exercise in which they too can share.

Then to hold them up for critical review, discussion and evaluation in as objective a manner as is possible, gives the opportunity to identify which tend to allow maximum freedom and interaction and which tend to hamper it, and make for suspicion and distrust.

There may well be no easy resolution of differences. To take an extreme example, the inmates of a detention institution for delinquent adolescents will see their very identity threatened and see themselves being co-opted by representatives of the establishment if they move from a norm of distance and aloofness to one of co-operation and open interaction. My assertion is simply that there is more hope of change if norms are clearly identified, opposing views heard clearly and respected as far as possible, and discussion encouraged.

Perhaps the most powerful approach is for the teacher to model in his own behaviour the norms he considers desirable as far as he can, to make known how he feels (as well as what he thinks) about them, to recognize when he himself violates his own norms and to talk openly about it, and to assume that class members can, with encouragement, begin too to work by such norms.

A useful methodological approach is for him to identify and encourage others also to do so, when norms are being proposed, when they begin to find acceptance, when they are being tested, challenged, broken or revised, and to involve as many as possible in this activity as a conscious process, so that the norms are seen as common property.

EDUCATIONAL PLANNING

Educational planning must obviously take into account structures, curricula, classroom groupings, selection and classification procedures, programming and other procedures seen by the average teacher as rather remote and inaccessible to him.

However inadequate the present structures, however remote would seem to be the possibility of their renewal, a start can be made by each teacher in his own classroom.

One of the major differences between classes is this dimension of climate or atmosphere. Much more can be done to influence the quality of this climate by recognizing and working with the norms which develop it.

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PLANNING EDUCATION AND TRAINING FOR INDUSTRY'S NEEDS

R. V. Lawson, B.A., M.A.C.E.

Registrar, The Australian College of Education

Ex-Principal, Leederville and Fremantle Technical Colleges

INTRODUCTION

'There is a terrible snob element in Australia, people still regard working with your hands as something to be deplored. The idea of working in a nice suit every day has its attractions to parents.' Brian Tregillis, Department of Labour and National Service.[1]

The World War of 1939-45 led to a great development in industry in Australia to meet the shortages of munitions and of other imports cut off by the exigencies of the time. Australia was suddenly made aware of the lack of workers with industrial training and experience.

Technical Education Departments in all States were co-opted by the Commonwealth Government and large sums of money were spent in equipping institutions with new machines and buildings where necessary. Staffs were expanded and rapid training schemes evolved. Most of these schemes were successful and resulted in many workers gaining partial recognition in many of the skilled trades. In spite of opposition, experience showed that these full-time, preliminary training schemes were successful and the 'dilutees' produced from them were in many cases able to take their places successfully alongside recognized tradesmen after some experience had been gained in industry.

The part played by Technical Education Departments in training members of the Services in technical sections has had little publicity but technical institutions with civilian instructors, trained many thousands of servicemen in the basic skills required for their later specialized work in the services.

As the war drew to a conclusion and men began to re-enter civilian life, the need for training became greater and the Commonwealth Reconstruction Training Scheme was set up for this purpose. Very large sums of money were poured into the State Technical Institutions for more buildings, more equipment and to pay for extra staff required. A great expansion of Technical Education resulted and the necessity for closer co-operation with industry became apparent.

At the 'tradesman' level most of the training schemes involved a period of full-time instruction at a Technical Institution followed by a subsidized period in industry with regular assessment until the trainee was considered to have reached the standard of a tradesman. Despite opposition from industrial unions, these schemes were generally successful, adding many thousands of skilled men to the labour force.

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[1] Tregillis, B. Vocational Training—A Look at the Future, The Australian Technical Teacher, February, 1971.

At other levels much training was done at Certificate, Diploma and Associateship level with the C.R.T.S. subsidizing institutions and individual students. Perhaps some day a study will be made of the impact of the C.R.T.S. and the war on Australian Education. Much was learnt, much has now been forgotten.

These schemes have been mentioned because, at present, training methods are being examined with a view to cutting down time taken to qualify as tradesmen or technicians.

The efficiency of our workforce is a factor which can promote or limit the industrial expansion which has been so marked since the war. The introduction of more complex processes and methods into industry means that the level of skill of the workforce must be raised. There is less need today for the unskilled worker but more for the so-called semi-skilled and skilled. The problem of obtaining such workers is complicated by many factors, some of which will be discussed in more detail later but should be noted at this stage:

(1) The raising of the school age has produced a somewhat more educated school leaver who is not always content to become an apprentice.

(2) The prestige of 'white collar' occupations has led to a disinclination on the part of many young men to enter 'manual work'.

(3) The long period of training involved in many trades, with low wages for much of the period, has become unattractive.

(4) Most trade work is not regarded as a 'career' because tradesmen, generally, do not have any guaranteed continuity of employment.

(5) Graduation to higher positions is now more difficult for tradesmen and technicians as more firms now employ University graduates in positions once occupied by men who had risen through the ranks through ability and part-time study to gain extra qualifications.

(6) 'Over the last century the age of puberty in both sexes has been advancing by about five months a decade.'[2] This earlier maturity means a need for earning power to be achieved earlier. Early marriages, now much more common than, say, 20 years ago affect training.

In this paper it is not proposed to discuss training and education at University or other 'technologist' level but to keep to the training of the semi-skilled, skilled tradesmen and 'technicians'. The relationship of secondary education to industry will also be discussed.

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[2] Comfort, A. Maturity, Times Educational Supplement (date uncertain).

THE PROBLEM

'More than 50 per cent of those who left school last year would enter the workforce to receive in their working lives no additional training other than that provided by their employers.'[3]

In 1969 the ages of students in secondary educational institutions were as under (to nearest 1000):[4]

14 years	220,000
15 years	174,000
16 years	112,000
17 years	58,000
18 plus years	19,000

When these figures are analyzed it is obvious that of the 220,000 14-year-olds, only about 70,000 will still be at school at age 17. 150,000 will have left. Of course many will enter full-time courses in so-called non-tertiary institutions which usually have entry requirements of about the old 'Intermediate' or 'Junior' Certificate level. Such courses would include Certificate and Diploma courses at Technical Colleges; Agricultural Schools and colleges; armed forces; business colleges, etc. Statistics are hard to obtain but, if we estimate the number entering these as, say 50,000, almost certainly an over-estimate, this still leaves an intake into industry, directly from some kind of school, as 100,000. Of these, many will enrol for part-time courses at various institutions. Most will have had no preparation for any kind of employment.

Of the 70,000 leaving school in the 17-plus bracket, about 30,000 will enter universities and about 12,000 will enter full-time courses at institutes of advanced education.

At the end of 1969, total university enrolments were 105,000; colleges of advanced education (F-T and P-T) 43,900; technical colleges and schools (not including technical high and F-T Victorian technical schools) 380,000; teachers' colleges 30,000. The numbers in other areas are not readily available but, if we allow, say, 20,000, this would make a total of 580,000 people being educated after leaving secondary schools. The majority of these are part-time students. These figures really need further analysis because many are adults, especially in C.A.E. and T.Ed. However, the number being directly vocationally trained in technical institutions would be the great majority, even allowing for those doing 'hobby' and 'craft' classes. The number in the 15-25 group who are not being trained in any formal course is at least equal to the total number at all educational institutions although some of these receive training of one kind or another, possibly on the job.

These figures show that far too little is being done for the non-matriculant student and that, in general, far too much emphasis is placed on the education for the post-matriculant. The definition of 'tertiary' education has led to many anomalies. Under Commonwealth auspices the definition is[5] 'courses which commence at post-secondary or matriculation level'. This has made assistance unavailable to many students who have been capable of going on to more advanced levels. Certainly the secondary scholarships are of help and the 'secondary technical' scholarships have also helped many students to achieve certificates and diplomas as full-time students which would only have been available as part-time courses.

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[3] Tregillis, B. op. cit.

[4] Commonwealth Bureau of Census and Statistics, Schools, 1969.

At this point the terminology of levels is introduced, which, it is believed, conforms to generally accepted ideas. Areas of employment can be arranged thus:

Unskilled (labourers)

Semi-skilled (operatives, as some clerks, shop assistants, bulldozer drivers, etc.)

Skilled workers (craftsmen)

Technicians (diploma and certificate, teachers)

Technologist (university or C.A.E.)

Supervisor

Management

No occupation is entirely without skill of any kind although perhaps in some labouring occupations the body of knowledge may be almost nil. Even the man on the shovel needs some training in the right way to handle his implement if he is to maintain maximum output over long periods.

The terms technician and technologist in particular, have assumed wider meanings than the original usage which stemmed largely from the engineering industry. Today a technologist could be an accountant or graduate of some discipline such as economics, etc. Usually the terms are now used rather to indicate a level of work—e.g., technical level, technological level, etc.

The problem of educating and training the large number of school leavers who have left school before matriculation is the chief concern of this paper. An even larger problem exists in considering what should be done to give education to that large number who receive no formal education after leaving school. Perhaps more consideration to this will be given by governments in the future. One suggestion would be day release for all students up to the age of, say, 18 to attend some form of education. Problems of staffing, accommodation, programming, etc. would be immense, as was found in U.K. when trying to implement the Education Act of 1944. Maybe someone will do some research on this important problem which will not be discussed further in this paper.

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[5] 'Martin Report'.

WHAT INDUSTRY EXPECTS FROM SECONDARY SCHOOL LEAVERS

In 1959 a committee of the Australian Industries Development Association made a report on 'Training for Industry'.[6] Their report included a section which dealt with post-primary education. They were careful to state that they examined the effectiveness of post-primary education purely from the point of view of industry's needs. Post-primary education was considered at national level so that some of their findings and recommendations may not apply in all states, some states having already taken action on some of the lines indicated.

The committee considered the subject under three (3) aspects:[7]

1. Post-primary school curricula
2. Teaching methods
3. Guidance and counselling

The committee took the view that post-primary curricula must take into account the manpower requirements of industry. This would not necessarily mean that specifically vocational courses should be given in high schools. However, many such schools in U.S.A. and elsewhere do provide vocational courses for those students who are not oriented towards academic subjects. Much trouble in schools today arises from students who find that the normal high school academic subjects are not interesting to them. They are often considered by teachers as unintelligent or lazy when, in reality, many of these students are quite intelligent. They are bored with normal school work but often do well when they find a subject which interests them or when they enter a new environment such as their job or a technical school or college.

Some attempts to design classes for these non-academic students have been made but usually have met with little success. This is due to two main factors, (a) the courses are usually 'watered down' versions of academic courses, which the students soon realize are meant for the less intelligent and they find such courses often even less interesting that the original academic courses. (b) The teachers in such courses are almost always drawn from the ranks of the normal high school staffs. These, very often, are quite unable to adapt to entirely new syllabuses, where such are drawn up, and continue to use old ideas and methods—the very things from which students wish to escape. The teachers in these courses are usually without any industrial experience, even in manual arts and commercial subjects.

The A.I.D.A. committee does, however, oppose early specialization as this can restrict students in their choice of career and can deprive industry of workers in areas where a demand exists. The aim should be to produce students with a broad basic education, whether they be male or female, which should provide for future educational activities whether in university, C.A.E., technical education, industry or home duties.

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[6] Australian Industries Development Association—Training for Industry Report of Committee, August, 1959.

[7] ibid.

Until the age of 15-16 industry states that it prefers students who have studied a core curriculum involving—English language and expression, mathematics, introduction to the sciences, view of world history and geography. A knowledge of the language of 'an influential foreign country' is also considered desirable. It is felt by industry that all boys should, irrespective of their future vocations, have the opportunity to acquire at least the rudiments of manual skills and to become familiar with materials and tools in common use. Girls should not necessarily be excluded—in most schools boys do manual arts and girls, domestic arts.

The A.I.D.A. committee appears to have been influenced by the ideas of secondary teachers, and have made a sweeping generalization, rather than a real appraisal of industry's requirements at the various stages of the employment levels. It is perhaps pertinent to ask whether a student's interest and progress in social studies or languages is in fact of importance to employers when selecting apprentices, clerks, etc. Much muddled thinking still exists among employers, unions, teachers (even in technical colleges and schools) as to the influence of a good general (so called) education. It is now generally accepted that a good student with an academic background can usually do well in any type of work and that the old saying that 'good with his head, no good with his hands' and vice versa are not and were never, true. The good student at high school level has usually done so because of (a) high I.Q., (b) intrinsic or extrinsic interest in the work, or (c) 'coaching' methods of teaching.

All students with high I.Q.s should be able to do well in any type of work, provided that they possess the necessary neuro-muscular co-ordination and an interest in the work undertaken. Tests to ensure suitability of co-ordination of eye, brain and muscles can be and should be given to all entrants to skilled areas. Aptitude tests to determine ability to master the content of a course should also be given—these should, if possible, ignore present body of knowledge. The high I.Q. student or the others named above may or may not do well in the skilled trades or similar areas.

Experience has shown that high I.Q. entrants to skilled trades either do very well or lose interest and withdraw or become poor workers. Many also leave the trades for technician or supervisor jobs. In addition, the opportunities now offering to the 'bright' academic students are becoming so numerous that employers cannot recruit such people for the trades and crafts. This situation can only become worse while the present conditions of training and wages continue.

This leaves the employer with little other alternative than to find his apprentices, etc., from among those classed as 'drop-outs'. As suggested above, many of these can prove to be excellent employees when they enter the new environment which employment provides—they have, in many cases, simply lacked interest in academic work. Good testing programmes can help employers to select the best types and many agencies, such as the Commonwealth Employment Service, Education Department counselling services, etc., exist for this purpose and could be used much more than they are at present. The passing away of public examinations at lower levels will perhaps persuade more employers to use other, and perhaps more reliable methods of selection.

Whatever an employer may do to select and an employee afterwards do to qualify himself, the fact remains that 100,000 young people leave school each year in Australia with little real education slanted towards employment suitability. (The chief exceptions to this would be girls with commercial training.) Perhaps the chief aims of education in schools today can be stated briefly as:

(a) to give children an awareness of the world around them, including an appreciation of their culture and of the achievements of science and technology;

(b) to make them good citizens of their country (whatever that may mean) with an awareness of its problems;

(c) to give them a foundation of knowledge that will help them to earn a living.

The last object is given far too little emphasis and most school leavers go out quite unprepared for any kind of employment.

While early specialization in many instances may be unwise, there are many cases where young people show aptitudes early in life with perhaps little interest in the usual school subjects. Something should be done for these students before they leave school and this could result in fewer 'drop-outs'.

At the present time many alterations in the content of syllabuses for secondary institutions are under close scrutiny. For example, the A.S.E.P. is investigating all areas of science education. However, most of the research undertaken in connection with syllabus variation is in the hands of teachers and academics and still has a good deal of emphasis on preparation for tertiary academic studies, although such an object is often denied. Teachers, rightly enough, with their knowledge of methods of imparting information and of the capacities of young people, must always play a leading part in the final setting up of a curriculum. It is doubtful, however, if assessment and statement of the aim of that curriculum is best left to the teachers.

In research done on the needs of secondary students there has, at times, been some consultation with representatives of industry. However, the opinions of the industrial leaders have been more influenced by the teachers than vice versa. Teachers have 'sold' to industry that the matriculant or the 'leaving certificate' holder is necessarily the best school leaver to fill *any* job from apprenticeship to office work. This is borne out by increased starting salaries, shortened training periods, etc., given to these students. Many students who have been labelled failures at the levels mentioned would be at least equal in efficiency to the successful candidates if they were able to do courses at high schools which suited their attributes and aptitudes.

In a report entitled 'Secondary Education in Western Australia'[8] it is notable that a committee of 12, which was charged with making recommendations, did not include any representatives from industry but consisted almost entirely of members of the teaching profession. Of those who gave evidence, there was only one employer's organization, and one employee's organization. It would be of interest to know whether other opinions were solicited or whether industry, in general, was just not interested enough. The recommendations of the committee are interesting, in particular those labelled 'High School Certificate Courses' (Appendix 7). These consist of (a) 'core' subjects—watered-down English, maths, science and social studies; (b) 'Social Education' which includes library, physical education, sport, religious instruction, music, art, health education; (c) pre-vocational which are stated to be pre-vocationally oriented and special workshops are to be provided. Included in this area are 'office procedures', 'retail trade', 'transport', 'home handyman', 'boating', 'other courses', which includes home science, typing, woodwork, metalwork, craft, community service, personal development. This appears, on the surface, an admirable course, but, in reality is largely a rehash of the old M-T courses, etc. Unless some new thinking be given to teacher-recruitment from industry, rather than from matriculants, such courses seem doomed to failure as were the old 'high school certificate' courses.

Very much more objective research must be done in close collaboration with industry to find out just what is the most desirable product that secondary schools should produce at, say, fourth-year level and that such research should be undertaken not only at top departmental and executive level in industry, but among people at all levels so that a truly cross-sectional picture can be obtained. There should also be some new thinking about teacher recruitment. Entrants from industry, say from skilled trades or offices, of mature age, should not have to undergo academic training at matriculation level, but should be accepted for teacher training if they can pass aptitude tests for their fitness to be teacher-trained. Many of our best technical teachers have not had to matriculate and have done well in teacher training. Perhaps the courses undergone and the experience gained in becoming a skilled tradesman or technician are as good an indication of fitness for further study as ability to pass examinations at the end of a secondary school course.

It is urgent that the needs of the 100,000 young people who enter industry from schools each year be studied more closely for the benefit of the students and for the benefit of industry. Secondary education will, in future, need to have many of its courses adapted for this purpose, not with the idea that all who enter industry early are of low I.Q. but with aptitudes and interests of students in mind. Many of our so-called 'drop-outs' are really intelligent children; academic achievement is not the only manifestation of intelligence.

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[8] Report of the Committee on Secondary Education (Dettman Report), Secondary Education in Western Australia.

At present industry's ideas of what it needs from school leavers is confused and often mistaken. Research alone can help to clarify the position of schools and industry.

WHAT INDUSTRY NEEDS FROM POST-SECONDARY INSTITUTIONS

'The countries of the world which have made the greatest development in science and technology have sponsored technician training to a far greater extent than we have in Australia.' C. Gilmour.[9]

As explained earlier it is intended to deal only with training and education in the areas of semi-skilled, skilled trade and technician training. Under the Commonwealth classification these are not generally classified as 'tertiary' because entrance is not necessarily at matriculation level. In some states this type of training is undertaken in technical colleges or schools while in some (e.g., in Victoria) much is done in colleges of advanced education at certificate level. Some of these courses at 'technician' level have a final standard which is often close to the standard of some university degree courses and is often so recognized by industry.

The question of nomenclature of courses in the various institutions, government, semi-government and private, is becoming of greater importance with the increasing mobility of the working force throughout Australia. Surely it is possible for our educational authorities to work out an accepted system of awards. For example the term 'diploma' has a meaning which varies from one state to another as does the word 'associateship'. Many private colleges issue 'diplomas' which possibly involve no more content than that of a single unit in a technical college diploma which, perhaps, has 20 units.

The term 'certificate' can cover anything from a single unit to a course of several units and this word should not be used for courses at all but only the terms 'diploma' or 'associateship' used, with, perhaps, divisions within each to indicate the level such as 'diploma', 'advanced diploma', or perhaps the term 'licentiate' could be given wider use. There may be other possible names which could be used.

All these terms must be most confusing to employers and others who try to evaluate qualifications of applicants who come from different states and must cause much loss of time in trying to find out just what standard each applicant actually reached, cf. universities.

In training people to take their place in industry, four elements can be identified:

(a) On-the-job training—often labelled 'sitting alongside Nellie'.

(b) Off-the-job training—which can be done either at work or in a school.

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[9] Gilmour, C. The Responsibility of Technical Education and the Role it might Play in the Future. The Australian Technical Teacher, February, 1971.

(c) Students study in their own time.

(d) Production.

In apprenticeship and in many other occupations 'on-the-job' training is very important as it is here that skills are mainly developed. In many cases, owing to pressures of competition and consequent necessity to cut costs, little time is given to formal instruction and 'sitting alongside Nellie' or, watching a tradesman at work is often the only way that an apprentice or other learner can acquire the skills which he tries to put into practice. In most workshops those responsible for training have no qualifications as instructors. It is, therefore, probable that in future years, more and more time will be needed in technical institutions for the acquisition of skills as apart from gaining the required 'body of knowledge'. (Also we must provide training for training officers.)

The co-ordination of all these four elements is a problem which has yet to be solved. Many instructors in technical institutions maintain a liaison with employers whose staff are attending the school or college but the syllabus of work usually is very much at variance with the immediate needs of industry which govern the work of an apprentice, subject to the stage of his apprenticeship.

THE SPECTRUM PRINCIPLE[10]

It is possible to define the work content of any job—we already do this by the technique of job analysis. This determines what is needed in terms of knowledge and practical know-how.

It is possible to analyze all jobs, however they are classified, and thus create a job spectrum or job scale. The jobs at one end would have long training periods; those at the other, short training periods. In between any job could have a position on the spectrum according to the length of the training period.

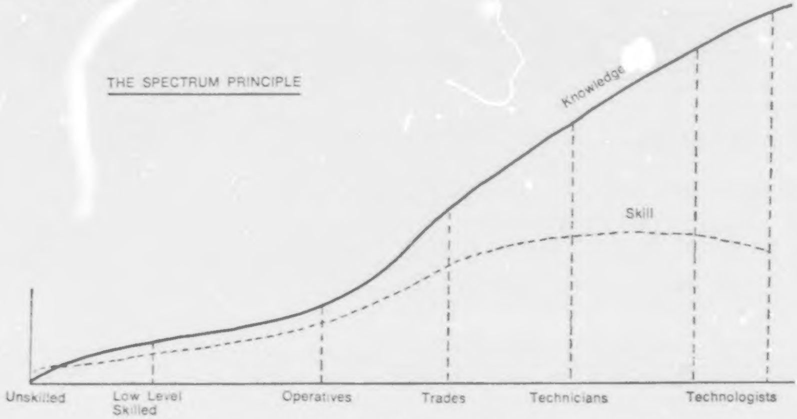

Figure 1. Skill and knowledge at various levels.
(After Meade)[11]

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[10] Wellens, John The Training Revolution.

[11] Meade, J. P. de C. Systematic Training Pays, Report on Seminars, September, 1966.

At one end the training period could be as short as a few hours, at the other end several years.

There are three important requirements in the spectrum principle:

(a) the need to investigate and define each job;

(b) The establishment of a suitable syllabus;

(c) The need to determine the length of the training period needed to implement this syllabus.

This differs from the usual practice at present, where, first of all a period of time is set, then the syllabus of training set out to suit the time involved. In trade training in particular, great emphasis is put on 'time-serving' and few tradesmen will agree to shortened periods, fearing that their 'margins for skill' will be affected if they agree to shortened periods of training. Shortened time trade courses are certainly now being implemented but in these it is usual to find that the actual time involved in training is not shortened in hours of class and workshop time. The effect of shortened apprenticeship on skill acquisition has yet to be investigated. There appears to be no real reason why the old concept of apprenticeship needs to be retained. There is no real difference between an apprentice and any other learner. urely some better system can be devised to produce skilled tradesmen.

Even in full-time technician courses the old idea of a three or four-year course is taken as normal and then the hours per week are filled up with, first, the essential subjects then so-called ancillary subjects are added. Often these subjects bear little relation to the course's real requirements but load the student with more and more work. Prestige still plays a big part in the formation of courses as does, sometimes, a desire by heads of departments to 'empire build'.

In all cases where a course is to be established or amended, the first thing that should be done is to establish a 'schedule of skills' and 'body of knowledge' so that the objects of the course are clearly defined from the outset. Something of this nature was done about 10 years or so ago in several states at the request of the commonwealth authorities. 'Schedules of skills' for a number of trades were compiled by teachers in the trades with the help of industry. The fate of these 'schedules' is somewhat of a mystery and it seems very doubtful if they have had any real impact on trade training.

In seeking to establish the requirements in trade or profession there must be active and realistic co-operation between educational authorities and industry. This is usually achieved through advisory boards set up by education departments which consist of representatives of employers and employees under the chairmanship of a representative of the director. Usually this is a superintendent with a college principal in attendance. Sometimes the head of the section in a college or school is invited to participate.

These boards have done some good work in the past but have often suffered because the representatives of employers are too far removed from the workshop floor and the union representatives are frequently older men, sometimes retired, chosen more because of their services to the union, or similar organization than for their knowledge of the requirements of industry. A further weakness of these boards is that, unless firmly chaired, they tend to become sparring grounds where criticisms come from either side. Such boards should be abolished or at least modified into 'rubber-stamping' bodies to take a last look at the established requirements. In every case a piece of objective research should be undertaken by an independent person or small committee who would check all claims about the requirements. This person or committee would then look at the real aims necessary to enable a student completing the course to take his full place in the industry in the required category. Statements about the amount of mathematics science, or other subjects required, should be checked with workers on the job and observation made as to whether these in fact, are used as claimed or whether this knowledge is of *real* use. Many skilled workers have means of avoiding calculations involving paper and pencil and often hours of fruitless teaching of difficult mathematics, etc., could be avoided, if tests were made as to the real necessity of such teaching. Students have been known to master many mathematical processes when they have been able to see the immediate use. The teaching would be at the point where such was essential.

Another assessment of aims of courses should include consideration as to whether the aim is to produce a satisfactory worker in the chosen field or whether the course is one which would give a qualification for promotion. Many instructors of apprentices consider that any course of training given to these students should be such as to enable them to become foremen or even to run their own workshops. This is an opinion which is open to some question.

Technician courses are ideally terminal courses which give knowledge in depth in a limited area and arguments can be put for and against the suggestion that completion of such courses should give an entry into 'technologist' courses. If such graduates are to become technologists, perhaps conversion courses of some kind should be taken.

Many 'technician level' courses, in reality, are not courses in their own right but are, in fact, portions of longer courses, e.g., say an 'electrician's certificate', is often an integral part of a diploma in some branch of electricity. This practice has some good points so long as the real purpose of the qualification is understood.

Although there are many points of contact between industry and technical education departments, there is still a lack of understanding between them. There is a disinclination by industry generally to make any large contribution to government education as a contrast to what has been done for universities. Industry will make major contributions to more effective technical training as it becomes conscious of its responsibilities and of the benefits which could be gained. The development of a really effective partnership is a major problem which should be attacked more vigorously now. Some progress has been made in the U.K. where the

Industrial Training Act is now in operation and firms are taxed in order to meet costs of training. This taxation or levy can be recovered if they are training a sufficient number of their staff. This training can be done in their own workshops, in technical institutions or, as is more usual, in both areas. This can mean that those firms which undertake no training help to subsidize those which do such training.

Both industry and technical education need to take steps to ensure that a really objective analysis is made of the real needs of industry and of the steps necessary to satisfy the needs which such an analysis reveals.

At the Pan Indian Ocean Conference on Technical Education and Training in Perth in September, 1966, papers were delivered on the subject of training for industry. Discussion groups, composed of representatives of many countries bordering on or adjacent to the Indian Ocean, were held and recommendations were made as under:

'Industry should consider the following to improve its contribution.'[12]

1. A major contribution would come through industry clarifying its needs. It was emphasized that this required identifying the needs of the individual firm rather than the whole industry.

2. Industry should make self-initiated efforts to keep technical education up to date in its ideas, literature and equipment. This would probably be a two-way exchange with technical education, keeping industry, up to date in some areas. This could be achieved by interchange of instructors and through the provision of equipment, donations of books, etc.

3. Industry should tell technical education what its needs are, and this would involve identifying responsibility for training within the firm.

4. Industry should assist in developing and using sandwich type or part-time courses in technical institutes and should be aware of use for assessment of staff, etc., and encourage staff to obtain qualifications in various fields through the use of these courses.

5. Prizes, scholarships, grants and support for projects concerned with their industry should be provided by organizations or groups of organizations.

6. Vacation employment for people involved in technical courses should be provided by industry. It was generally considered that this should entail actual productive work and should not be a tour of training.

7. Communication of objectives, policies, and reasons for these both between industry and technical education and within each so that these are fully understood by all levels of people involved was seen as the key to achieving all the foregoing points.

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[12] Report of Discussion Groups, P.I.O.C.T.E.T., 1966.

8. Industry should undertake in-plant training in the development of highly specialized skills. The basic training in the fundamentals should be carried out by technical institutions.
9. There is a general shortage of competent instructors for in-plant training programmes. This exists at all levels and steps should be taken to train suitable people.
10. Management must develop a clearer objective of the needs and aims of in-plant training and communicate this to all levels within the organization.
11. Small firms and perhaps larger ones may benefit from drawing upon existing resources. It is often possible to arrange for staff from technical institutions to conduct classes, seminars or 'workshops' within the plant.
12. Small firms may find advantages in group training schemes by sharing the services of a good training officer to organize in-plant training and by negotiating as a *group* with a local technical institution to provide an appropriate course. This may or may not include arrangements for rotating trainees between the firms in the group.
13. The extension of an inspection function either in association with apprenticeship or other formal trade training provisions or on some other basis should be considered to provide some control of the quality of training in both industry and technical education institutions.

Technical education should consider the following to improve its contribution:

1. There needs to be a specific requirement that professional technical teachers be required to have completed a period of experience in industry. This to be associated also with provision for refresher training or some scheme for continuing contact with industry.
2. In addition to teachers, educational institutions should have staff specially trained and experienced in interpreting information from planning bodies, identifying skills and knowledge associated with occupations or groups of occupations and working with teachers to translate into educational programmes information gained from surveys of needs for trained manpower.
3. Technical institutions should encourage and assist their teachers to visit industrial undertakings frequently so that they see what their graduates are called upon to do in the work situation; are able to appreciate fully the nature, especially where it changes, of the work situation; may discuss educational and training needs with those in industry who are associated immediately with the graduates.
4. Technical institutions should employ a proportion of part-time teaching staff who are specialists in their field or are connected with new developments in industry. Arrangements should be made for close contact between such people and the full-time members of the teaching staff.

5. Introduction of a system of extended leave to study new developments which are directly related to industry or to conduct research in a particular field.
6. Provision for summer schools or other short refresher courses to be arranged at an appropriate time.
7. Provision of some opportunities for staff to proceed on overseas postings or on loan to other institutions. This could be in association with a system of sabbatical leave.
8. Making available specialized abilities and facilities to help industry solve its problems, e.g., consultative work, retraining programmes, in-service courses.
9. Giving more attention to the development of teaching aids and techniques of instruction which could both reduce the cost of providing training and increase its effectiveness.'

As these recommendations were made by experts, both from industry and from education, from many different countries, they are very valuable and should receive wider publicity than has been the case. One may well wonder whether such a conference has real practical results.

While discussing training, some mention must be made of those government authorities which do undertake full training of many technicians and apprentices and who maintain workshops and staff for this purpose. Railway departments, the P.M.G. Department, the armed forces schools are excellent examples and most co-operate well with technical institutions. Large companies such as B.H.P., I.C.I., etc., also have excellent training schemes.

When needs in any field of training have been ascertained by industry and technical education the implementation of programmes to satisfy those needs for trained personnel must be undertaken. This is largely the province of the teaching authorities with the approval by industrial representatives.

RETRAINING OF DISPLACED WORKERS

Changes in demand for products causes many old industries to go out of existence and many of the old occupations to become no longer viable. The workers so displaced, once classed as skilled, go on to the labour market without having any of the skills or knowledge required by new and expanding industries.

Much lip-service has been paid to the necessity for retraining such displaced workers, giving them the opportunitiy to learn the new skills or to gain the new knowledge required. Little real planning has been done in this area, largely, I believe, because of the limited amount of factual knowledge available. A beginning has been made in the Commonwealth Government's scheme to train or retrain women who have been out of industry for some years.

With the advances now taking place in industry it should be possible for research to be undertaken to find out the major changes anticipated in industry and the resulting changes in manpower needs. While realizing that no accurate estimate of such changes is possible, at least the nature of changes in the near future could be estimated and this would enable industry, technical education, government instrumentalities, to prepare to implement suitable courses when the need arose. The financing of such courses would, obviously, be a function of some branch of the Commonwealth Government such as the Social Services Department.

The Department of Labour and National Service should be authorized to undertake a Commonwealth enquiry into the probable changes in industry which will necessitate such retraining and some organization set up to implement the results of such an enquiry.

DEVELOPING CURRICULUMS FOR TRADE TRAINING AND COURSES FOR CERTIFICATES AND DIPLOMAS

After analysis has been done to determine just what are the necessary skills, body of knowledge, desired attitudes and habits of trainees it is then necessary to distinguish between the instruction which should be given on the job, by technical institutions or by both. The difficulty of co-ordination has been discussed earlier.

Factors governing the formulation of training recommendations include:

(a) The type of occupation

(b) The educational standard for entry

(c) The age and maturity of the trainees

(d) Whether the course should be full time or part time (including day release, block release or 'sandwich' courses)

(e) The economic cost of training

(f) The time to be allowed for the course

(g) The acceptance by the 'interested bodies'.

When the training to be given in technical institutions has been decided the development of the course must be undertaken by the staff of the section concerned. Information will have been gathered from industry and other sources as to the aims and objects of the course and the necessary skills to be acquired and theoretical knowledge necessary.

When compiling a syllabus for any course of training several important factors need to be given careful consideration (not necessarily in order):

(a) *Time*—Training which is too long leads to failure and wastage. Students lose interest and industry suffers because trainees do not qualify in sufficient numbers.

(b) *Degree of Difficulty*—The course should be able to be passed by the average type of trainee required in the particular industry or trade.

(c) *Confirmation*—Industry needs to be sure that the course does, in fact, produce the skills, knowledge and competency that are needed.

Perhaps this cannot be done until graduates from the course enter industry although as most would be part time the effects of the training and education should become apparent reasonably early.

(d) *Changes in Industry*—The course syllabus should try to anticipate changes which are *known* to be coming or, at any rate, give students a basis of knowledge which would enable new developments to be understood.

When training is undertaken by industry in collaboration with technical institutions a more systematic approach is needed than has generally been the case in the past. The steps in setting up such training have been illustrated by Meade in the following diagram:

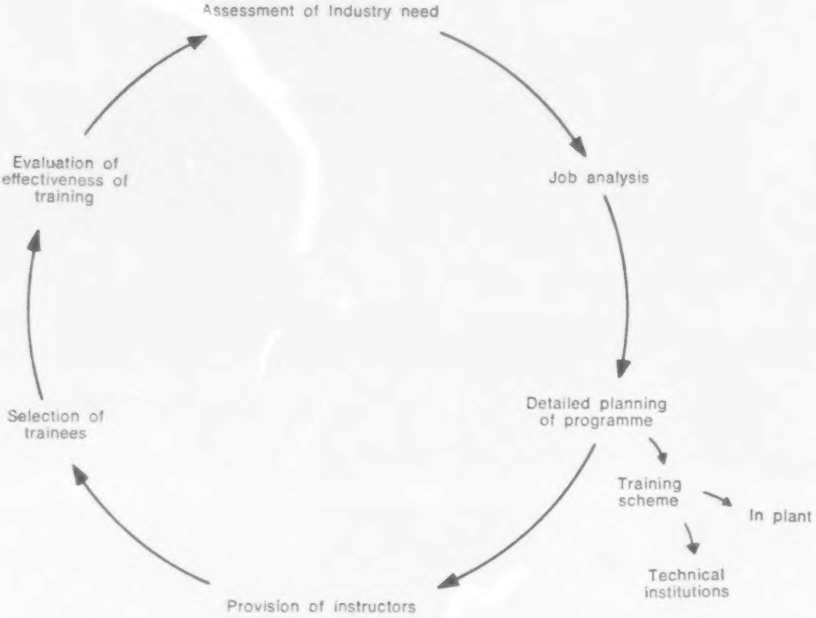

Figure 2. The systematic training cycle.[13]

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[13] Meade, J. P. de C. op. cit.

CURRICULUM DEVELOPMENT IN TECHNICAL EDUCATION

'The tendency in designing courses is to establish the standard of entry and very often we are attempting to keep students out rather than get them in.' C. Gilmour.[14]

It has been stated by Hermann[15] that 'Technical education syllabuses are often simply lists of subject matter content. It is rare to find course aims or subject objectives, to find a preamble discussing the relationship of a subject to other subjects in the course, to find comments concerning the "depth" at which the material is to be taught, or to find expressed the structure and integrative themes of the curriculum. These features of a syllabus are self-evident in few cases. Often the teaching and examining would appear to be invalid for teachers (especially part-time teachers and teachers appointed after the initial implementation of a syllabus) and examiners may not be able to determine the subject objectives from the syllabus. Past examination papers do not necessarily provide a reliable guide. Unfortunately it is always the student who suffers most directly by being failed for not knowing work he has not been given, or by being fed an uninteresting course or one unrelated to his vocation.'

While perhaps this is a rather harsh judgement on all technical syllabuses, a study of many will show that it is true too often. Efforts are made in some states to have syllabuses more detailed, some, for example Accounting and most apprentice courses in W.A., are given in week by week detail. This is valuable, when so many students are transferring within state boundaries. 'Depth' at which material is to be taught is sometimes difficult to define. Often meetings of instructors, senior instructors, etc., from the different colleges can decide upon any points at issue and the problem is then one of communication to all teachers in the course.

Where courses and syllabuses are designed by advisory boards the problem of communication can become important, because teachers who are actually engaged in the work are often not represented on the board. This can result in courses not always being the same in content and depth as was originally planned because teachers' interpretations may not always be the same as the board intended.

It is pleasing to note that in most courses of technical teacher training, some emphasis is given to principles of curriculum construction. It is probable, however, that at this point, much emphasis is lost because the trainee teacher lacks sufficient experience. In-service courses to be taken after, say, five years experience, should be given with greater emphasis on the aspect of construction of curriculums and syllabuses.

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[14] Gilmour, C. op. cit.

[15] Hermann, G. D. Processes in Curriculum Development. The Australian Technical Teacher, August, 1970.

Hermann gives a good example in diagrammatic form of the flowsheet of the curriculum development process within technical education hereunder:

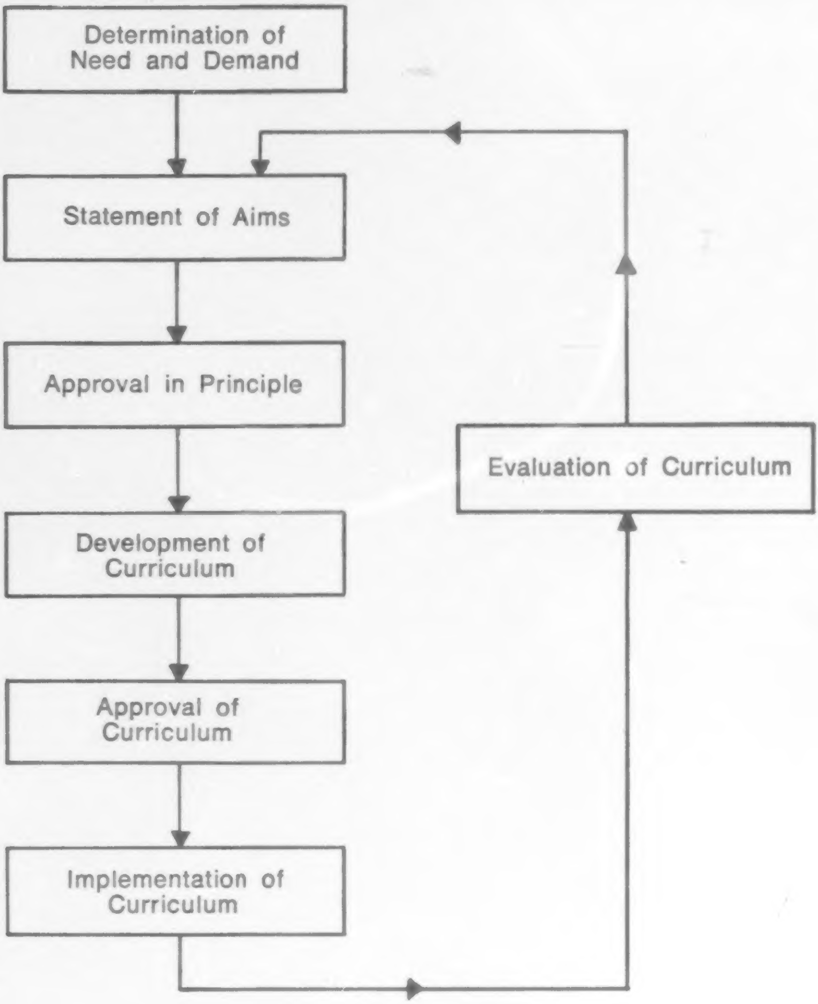
Determination of Need and Demand
Statement of Aims
Approval in Principle
Development of Curriculum
Approval of Curriculum
Implementation of Curriculum
Evaluation of Curriculum

Figure 3. Brief flowsheet of the curriculum process.[16]

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[16] ibid.

For the construction of a syllabus for a given subject which may extend over several stages, Hermann gives a flowsheet as under:

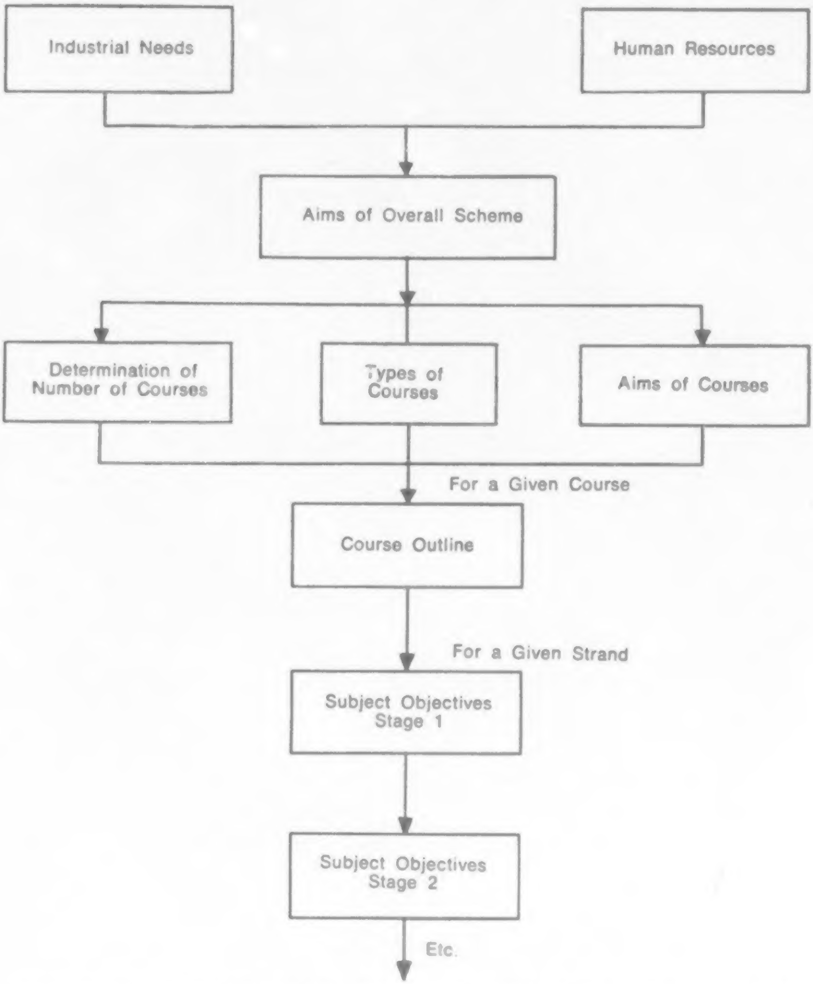

Figure 4. Flowsheet relating to the determination of objectives for a given subject.[17]

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[17] ibid.

Procedures vary in different states as to the acceptance or amendment of a curriculum, a syllabus, or a course. Usually boards set out the objectives, these are worked out in detail by teachers and senior staff who are actively engaged in the area. Principals, inspectors or superintendents then discuss these with the groups and when in final form they are usually sponsored by the principal or other officer for final approval to a board of studies or some similar body for ultimate approval by the director. They may be referred back to 'area' committees for further consideration or amendment if required.

One principle often used in course construction is that based on 'credits'. This credit system is based on the belief that a certain number of units at a certain level is necessary to establish the standing of a qualification. Weightings are given to subjects according to their equivalence (real or imagined) to established standards in secondary and tertiary institutions. As an example, in W.A., the Technical Education Division bases its credits on the equivalence of a subject to the old intermediate or junior certificate which has a value of one (1). Subjects at the level of H.S.C. or matriculation have value 2, subjects at the level of first-year university have value 4 and second-year university have value 7. Weighting of this kind has led to manipulation of courses to get the required number of credits and has led also to some most extraordinary estimations of 'equivalence'. Many students find some of the earlier subjects more difficult than those met with later in the course.

Such methods of course construction should be abandoned and realistic courses, based on industry's *real* requirements substituted, even though the accepted number of credits be not reached.

The subject is well discussed in Hermann's article which should be studied by all interested in this aspect of training for industry.

RECOMMENDATIONS

(a) At Secondary School Level

1. That secondary education authorities give greater attention to co-operation with industry in the construction of courses for the 'non-academic' stream of students. This to be undertaken by an independent committee not merely by educationists.
2. That more vocational guidance be given in secondary schools in areas relating to technical education and to the requirements of industry at trade and technician levels. Such guidance to be given by officers recruited from industry.
3. That Commonwealth Scholarships be given to enable selected students to take the courses that will be developed in secondary schools in the pre-vocational field.
4. That more efforts be made at secondary school level to ascertain what aptitudes students, particularly the 'non-academics' had towards some trade or technician training.

5. That people entering the teaching profession be given full credit for achievement in areas other than 'academic' subjects and not be required to take further examinations for H.S.C. or matriculation, before admission to teacher education courses.

(b) **For Industry and Technical Education**

1. That a Commonwealth Co-ordinating Committee be set up to co-ordinate names and standards of courses throughout Australia.
2. That technical education authorities adopt a more realistic approach in construction of courses so that the average student can achieve a qualification in a shorter time than is generally the case at present. Courses to include a minimum of ancillary subjects.
3. That more real co-operation between industry and technical education be attempted in designing courses and that training 'on-the-job' be more co-ordinated with education in technical institutions.
4. That the principle of compiling 'schedules of skills' be extended to all courses together with a better assessment of the 'body of knowledge' required.
5. That more research be undertaken into requirements by industry and that this be done by an independent agency.
6. That a new definition of 'tertiary' education be given to consider the end result of a course rather than its entry standard.
7. That research into the areas in which retraining of displaced workers is needed be undertaken by the Commonwealth Government.
8. That some form of compulsory education be given to the 100,000 early school leavers.
9. That the present form of apprenticeship be abolished and that it be replaced by some more modern and more flexible system.

TECHNOLOGY, TRADITION AND TABU: THE PLANNING OF TERTIARY TECHNICAL EDUCATION IN NEW GUINEA

P. B. BOTSMAN, B.COMM., B.ED., T.P.T.C., M.A.C.E.

Reader in English Language, P/NG Institute of Technology

In this paper I propose to outline the history of the Papua and New Guinea Institute of Technology which is a relatively new institution, situated in the Morobe District of New Guinea about six miles from the town of Lae.

SIGNIFICANCE FOR CONFERENCE

The Institute of Technology was, with the University of Papua and New Guinea, the first full-scale tertiary institution to be established in the Territory. This simple fact alone is important, since completely new incursions into untouched educational areas are rare enough and one presumes therefore, are of some interest to educational planners. Second, the short history of the institute of technology might well be seen a paradigm—a model for the educational planner to ponder. The story of the institute's conception, genesis and subsequent growth highlights a number of problems, not the least of which is that perennial problem for educational planners which is so aptly described in T. S. Eliot's words,

Between the idea
And the reality
Lies the shadow'

—but more on this a little later.

Thirdly, in a developing country educational problems and practices are thrown into sharp relief by the very nature of the environment in which they are found.

Finally, there is the sheer fascination of the problem itself—so that if all else fails perhaps this account of the challenge and responsibility of planning tertiary education in technology for students whose grandparents, if not their parents, were of the stone age, will keep you from abject boredom.

A BOY FROM TELEFOMIN

Not quite eighteen years ago, in November 1953, two patrols set off from a small village on the northern side of the main escarpment in the centre of the main island of New Guinea. Across the ridges to the south, the Fly River rises and from there drains a huge area of country finally emptying sluggishly into the Gulf of Papua, while to the north the mighty Sepik runs down to the Bismarck Sea. The two young Australians who led these patrols were intent on making a routine census check of some of the neighbouring villages. They had been at the small outstation for only two months and there was much to be done. Neither man returned. The primitive tribesmen of this remote area attacked without warning. Both patrols were ambushed because, as was later discovered, the local fight leaders had been waiting for such an opportunity. When the two patrols separated, word was passed ahead and the two young administration officers were savagely cut down, together with a number of their native policemen. This incident, which took place near the village of Telefomin just eighteen short years ago, has been recounted to remind you of the enormous cultural gap that has to be bridged in New Guinea. By way of conclusion to his account of this incident in his book *Justice Versus Sorcery*, R. T. Gore had this to say:

> 'These people had no knowledge of the outside world: The Administration to them was composed of the two white officers and a handful of police. The rule by this small band over so many seemed incongruous. The regimentation of their lives was irksome to them; they were not allowed to fight one another; they were made to clean their villages and because of a belief that the taro, their staple diet, was becoming smaller since the advent of the white man, they were troubled. This was a war to exterminate the Administration as they knew it, so they could live the old life.'

and this simple, sane analysis of the situation by a judge who spent many years in New Guinea amply underscores this point.

But you might well say that this is falsifying and overstating the picture because the Telefomin tragedy emphasizes the sensational and the atypical, and indeed it does. But I told this story partly for another reason and it is this.

Two years ago now, a colleague in my own department mentioned that he was going to take a run into Lae airport to see one of his former pupils from Brandi High School near Wewak. This lad, it appeared, had a half-hour stopover in Lae before going on to Port Moresby where he was going to enrol as a 'fresher' at the University of Papua and New Guinea. This young man was from the Telefomin area. Of course there is still no high school in Telefomin and it is perhaps unlikely that there ever will be, but there are over fifty in Papua and New Guinea now, where there were none in 1945, and only one or two as late as 1955. The point is that many of the students who are passing through those schools and entering tertiary institutions are not very different in background to the lad from Telefomin in my story.

Now, the boy from Telefomin is not meant to be representative. His case is clearly quite exceptional but there are many, many students in tertiary institutions in the Territory whose immediate forebears, if not as bloody, are almost certainly as backward. For instance, of the 330 students we have at the present time in the institute of technology, over 75 per cent give as their parents' occupation, two telling words—'subsistence farmer'.

I will not dwell on the human environment in which and for which we are working because I am going to assume that you know something of the Territory. Rather than conclude with a depressing catalogue of problems I merely add my personal endorsement to an observation made in paragraph 1.69 of the Currie Report 1964. It reads as follows:

> 'But we have found nothing at all to suggest that there is anything inherent in the mental make-up of Papuans and New Guineans which would prevent them from grappling, successfully, with the great intellectual effort that they are called upon to make.'

But there yet remains one very important facet of the human environment which must be emphasized, and it is this. The views of the people of Papua and New Guinea themselves, until very recently, have not and clearly could not, be sought concerning the type of education they wanted for their own country. Education, in all its forms, it is important to realize, has been *imported* and *imposed* on Papua and New Guinea.

The fact that education has been enthusiastically supported by the indigenous people of Papua and New Guinea should not be allowed to obscure this important fact, for it may be that the main reason that education has won widespread support in the Territory is as Brian Essai has suggested in his book *Papua and New Guinea: A Contemporary Survey*.

> 'Dominated by an epistomological system which uses myth and magic to interpret reality, the native regards European education as the magic key to the white man's secret of success and physical comfort.'

It is important then that we allow the possibility that what we are doing in the Territory in education may not be understood in the ways that we would like it to be understood. Indeed it may even be true that many indigenous people will become disillusioned, frustrated and bitter when they come to realize that education in and of itself will not bring them the affluence and comfort that Europeans in the Territory often so complacently accept as their right. Yet clearly most people expect the local people to be grateful for what we have done and are doing for them and let me assure you, in their own way I have no doubt that they are, but despite this I want to stress again that they have had no real say about the way that education in the Territory has developed, particularly at the most advanced levels. Now it seems to me that this negative facet of the human environment is of critical importance for at least four reasons.

1. Social pressure from the indigenous people to improve education is unlikely though considerable pressure to extend it should be anticipated.
2. The normal democratic checks and balances that operate in a more advanced society are absent.
3. when education is seen as a magical way of acquiring 'cargo' any hint of criticism is likely to be stillborn because of the awe and respect that the uninitiated invariably have for the cognoscenti.
4. Finally, because of the lack of interaction with the local community in the circumstances I have described, there is a danger that education will tend to long remain isolated and aloof from local culture instead of becoming an integral part of it.

It is so very easy to forget the human environment, but it is worth remembering the enormous responsibility we have accepted in that we are deciding what they want.

But to return to higher education; it is time to alter our angle of vision and to go back to 1963 when it all started.

A Commission on Higher Education in Papua and New Guinea was appointed in February 1963, by the then Minister for Territories, the Hon. Paul Hasluck. It consisted of Sir George Currie as Chairman, Dr. J. T. Gunther and Professor O. H. K. Spate. For our present purposes the most important of its terms of reference was a requirement that the commission give particular attention to: 'The establishment in the Territory at the earliest practicable date of an institution or institutions to provide education at or near the university level; and the range of courses, the degrees or diplomas to be awarded, the standards of entry and of graduation, and the staff and facilities likely to be required in successive stages of the development of such an institution or institutions.' The Commission was also required to make recommendations concerning the location of any new institutions and to produce a timetable for their establishment.

The Commission's report was sent to the Minister for Territories (then Mr. C. E. Barnes, M.H.R.) on the 26th March 1964, and released to the public soon after.

Two major themes were developed and reiterated again and again in the Currie Commission Report. The first might be termed simply—*the sense of urgency*—that all members of the Commission felt to exist. For instance, the very first paragraph of the report refers to the fact that educational developments in the Territory of Papua and New Guinea were lagging 'very seriously' behind current needs, and similar comments are made time after time. Seven years on, that message is still worthy of our attention.

The second major theme which is repeated over and over again in the Currie Commission Report is the need to plan for balanced educational development, to avoid expensive duplication of resources and to establish a system of co-ordination and control over future developments in higher education in the Territory.

But despite the eloquence of the Commission's pleas and the cogency of their arguments, present realities only vindicate their warnings and the soundness of their advice. Not seven years after their report had been lodged in Canberra, the same government and the same minister have had to announce a further commission of enquiry—this time, as you are all no doubt aware, to look into the *lack of co-ordination in higher education* in the Territory. This commission, under the chairmanship of Sir Alan Brown, is still considering its verdict.

But on the other hand the Currie Commissioners may have drawn comfort initially from the fact that the Australian Government did act to actually establish the institutions recommended in their report. In the event, two tertiary institutions commenced teaching early in 1967, just two and a half years after the report was lodged in Canberra. In that time the necessary statutes had been promulgated, some staff had been appointed, a site obtained and a building program commenced.

THE IDEA AND THE REALITY

Earlier in this paper Eliot's lines from *The Hollow Men:*

> 'Between the idea
> And the reality
> Lies the shadow',

were quoted and it was suggested in passing that these lines might serve as an occupational aphorism to be constantly kept in mind by educational planners everywhere. They are particularly relevant in the New Guinean context for a wide gulf has come to exist between the ideas which germinated in the minds of the Currie Commissioners and what has actually come to pass as far as tertiary technical education in the Territory is concerned.

THE ESTABLISHMENT OF TERTIARY EDUCATION IN PAPUA AND NEW GUINEA

Most of you will be aware that following the release of the Currie Commission Report, the University of Papua and New Guinea was established in Port Moresby with one of the commissioners, Dr. J. T. Gunther, as its first vice-chancellor. However, few will now be aware that the commission also recommended that what they called 'an institute of higher technical education' should be established at the same time and in the same place at Waigani in the June Valley. In short, the Currie Commissioners envisaged that the two institutions should be founded on the same campus. This was so that they could share facilities and other costly amenities such as a library. It was also designed to facilitate the co-ordination of the higher education that they considered should develop.

But for once at least in New Guinea, an arranged marriage did not quite eventuate, though doubtless solemn vows were duly exchanged. In fact the two institutions did cohabit for a year in Port Moresby sharing what facilities there were at the time. However, the marriage was never really 'on', for in 1966, a Member of the House of Assembly who was also at that time a member of the institute's governing council, introduced a Bill into the House which provided for the physical separation of the institute and the university. The ostensible reason for the introduction of this Bill was said to be because it was felt that New Guinea, which is a United Nations Trust Territory was being neglected, while Papua, an Australian 'possession', was getting all the educational 'plums'. But in any event, and for whatever reasons, the Bill was passed by the House of Assembly, with only token opposition from the Administration; Canberra then gave its consent and the divorce was complete. Let us list therefore as our first determinant of the pattern of tertiary technical education—*political considerations*—for there can be no doubt that the argument adduced in the House of Assembly in support of the separation of the two tertiary institutions was a persuasive one for at least two reasons.

First, as suggested earlier, New Guinea, as distinct from Papua, is a United Nations Trust Territory so that what Australia does north of the Owen Stanley Range is under fairly constant international scrutiny. Moreover, there have been in recent years a number of outspoken attacks in the United Nations specifically directed at Australia's developmental policies in New Guinea. It is arguable therefore that the case for separation was half won before it was even seriously proposed.

Secondly, and although I have suggested already that education, because it has been imposed on the Territory has not been particularly subject to local influence, by 1966 the new House of Assembly had begun to operate, albeit in limited ways, as an arena for regional pressure groups. Representatives from the islands and the highlands might well have been seen therefore as likely supporters of the move to locate the institute of technology away from Port Moresby.

Political considerations then, both those that emanated from New York and influenced Canberra, and those that came from within New Guinea itself, were important factors that helped to shape the development referred to.

Let us now imagine an underdeveloped country 'X' where there are two institutions 'Y' and 'Z' to be established at post-secondary school level, from funds supplied by country 'A'. The two institutions are to be built on adjoining campuses at point 'M' and they are to be the only institutions to offer higher education in the particular subject areas allotted to them. Let us suppose too, that two autonomous but marginally interlocking governing bodies are selected to run the two institutions. And finally let us suppose that institution 'Y' is to provide courses in arts, education, law, science and medicine, while institution 'Z' is to provide courses in technological areas, in particular, in engineering and commerce.

Now this prescription gives us ample scope for conjecture but let us spice the mixture just a little more. Let us have the government of country 'A' on the advice of a committee of enquiry decide that the courses in our technological institute are to be given at a lower level. Let us say that institute 'Y' will award degrees and institute 'Z', diplomas.

Here is a perfectly conceivable and apparently straightforward educational strategy. But of course this is only the idea. As the translation of this idea into reality begins, certain developments are likely to occur. For instance it is reasonable to assume that country 'A' will appoint to the governing bodies of its two projected institutions, persons with particular interests in the disciplines to be taught. Thus on the governing council of the one we would not be surprised to find a lawyer, an educationist and a doctor while on the other we would expect to find engineers, architects and businessmen.

Well we could go on and on like this but we have enough to develop several tentative ideas at this point.

First, the members of the professions represented on the council of the technologically oriented institution will tend to feel that their professions have been comparatively slighted, and second, given this basic dissatisfaction about status, it is likely that status equalizing forces will be generated.

Returning to actuality, in the writer's opinion, a second major factor that has helped to shape the pattern of tertiary technical education in the Territory of Papua and New Guinea has been the influence of professional occupation groups.

OTHER INFLUENCES AND CONSTRAINTS

The Currie Commission Report makes it clear that the Commissioners had in mind an institute of technology for the Territory having approximately the same sort of relationship to the university as the S.A.I.T. has to the University of Adelaide. But three critical differences conspired to make this analogy imperfect: first, it was not envisaged that there would be any course duplication in the two institutions planned for the Territory. (In South Australia as you are all aware, it is possible to complete a diploma in the institute of technology or a degree in the university in the same area of study, say for example, civil engineering.) This meant that the only institution that could supply professional manpower needs in engineering could not grant degrees, only diplomas. Second, although the Currie Commissioners had suggested that in the beginning, entry standards for the institute would be lower than those for the university, this proved to be impractical, since, as entry to the university was recommended after four years of secondary school, this would have meant that students from Form III would have formed the intake to the institute. In the event, students at this level would have been quite unable to cope with the courses suggested, since any course with a technological bias demands a thorough grounding in both mathematics and science. Hence when these institutions began to admit their first students they each demanded the same entry qualifications and standards.

Finally, it was soon realized that if students were to achieve reasonable standards of competence in technical areas the length of the diploma courses would have to be of five years duration, since even with a Form IV entry, they were still ill-equipped in mathematics, physics and chemistry. The end result was that it was decided that diploma courses in engineering would need to be of five years duration which was the same length of time taken by students entering at Form IV to gain a degree from the university.

In the light of the comments just made we must now add a third factor, for remembering that 'education is a seamless robe' it is clear that pre-entry achievement standards were another critical factor.

In addition to the factors of political and professional influence and the pre-entry achievements of the student input, one further factor which is a little more difficult to define or describe, but which is none the less powerful for that reason, should be mentioned. In a colony, among the intangible imports from the metropolitan country are included attitudes, including attitudes to education. And it is this factor, the subsconscious intangible and rarely identified preconceptions and attitudes that we bring all unnoticed to our educational thinking, that constitute the fourth shaping factor that has influenced the development of technical tertiary education in the Territory.

Well the scenario is now written and the actors ready to begin, but at this point I will not dwell on detail but simply sketch in some of the major developments since 1966.

1. Before the move to Lae actually took place in early 1968, the institute council advertised for and subsequently appointed a director and a PROFESSOR of civil engineering.
2. The council proposed and Canberra agreed that institute staff should be placed on the same salary scales and given the same conditions of appointment as the staff of the University of Papua New Guinea.
3. In 1968, a second school, the school of accountancy and business studies (the first was engineering) was formed and admitted its first students in that year.
4. The year 1969 saw the House of Assembly Ordinance amended to change the institute's name from the Papua and New Guinea Institute of Higher Technical Education to the Papua New Guinea Institute of Technology.
5. 1970 saw the same Ordinance amended again, this time to allow the institute to award degrees.
6. 1971 saw two new Chairs created and filled—one in electrical engineering and one in architecture and building studies.

Which brings us up to the present time when we have in the Territory two full-scale teaching institutions, each autonomous and each having the power to award degrees and the story is yet unfinished.

DEMOGRAPHIC DEMANDS AND COURSE DEVELOPMENTS

Because students enter tertiary institutions in the Territory after only four years of secondary school, introductory or pre-tertiary studies are needed. In the institute, this has been catered for by creating a school of basic studies which consists of all the departments offering service courses to the professional, vocational schools. It has been found that students need to do 1½ to 2 years in this school before commencing their undergraduate studies proper. The departments within this school are those of English language, physics, chemistry and mathematics. Now, despite the fact that we have been successful in recruiting what I consider to be first class staff, all these departments have had very great difficulty in bringing the student nearer to a stage of achievement where tertiary studies can be confidently commenced. Failure rates in first year have been as high as 33⅓ per cent, so student wastage has been great.

Yet the interesting thing is that this high failure rate has tended to work as a balancing factor to the vertical aspirations of the institute as a body corporate, already discussed. In fact, so many students have failed that the institute is now offering a two-stream course, and even a third stream has been considered. Hence the institute, though it now awards degrees to its top stream of students who will be very few in number for many years to come, awards diplomas to a second stream and plans are currently being considered to try to devise programmes for some students, at even lower levels.

In a country where skilled indigenous manpower is still virtually unprocurable and where the students who are failing represent the very best students the Territory schools can produce, and where the time we have is so short, wastage of manpower talent is quite unthinkable as well as being uneconomic. This realization has gradually, therefore, led us to the situation where we have a true polytechnic, in the literal sense of the word, and in my view this development is one to be applauded since one implicit theme in this paper has been concern that educational organization patterns from overseas have been imported and imposed too uncritically in the New Guinean situation.

Another influence factor is the teaching/lecturing staff, but before dealing with this sector, some of you may be wondering about the material inputs, including physical plant, etc.—let me quickly assure you that we have been given everything we need in this regard—not everything we want, mark you, but suffice it to say that the institute is housed and equipped according to A.U.C. standards. To return now to staffing. We have been most fortunate in this area, because we have been able to recruit a young, enthusiastic and extremely well-equipped staff, but acute problems still remain.

The teaching problems occasioned by the challenge of introducing people from a stone age environment to the sophisticated technology of our complex twentieth century world, are immense and they are particularly so in pre-undergraduate teaching areas. In the school of basic studies it has proved possible to recruit people with teacher-training and teaching experience in schools as well as the necessary academic qualities; it is much more difficult to recruit an engineer or a surveyor with this sort of background. We try to meet this problem by running regular teaching seminars, by using modern and at times extremely innovative teaching approaches, but the teaching task is extremely complex and this will remain a problem area for some time.

However, there is because of this situation a readiness to experiment and to try completely new approaches. I therefore have no reservations in nominating the teaching staff and their attitudes as another potent shaping factor which has helped to determine courses and procedures.

In addition, the founding director of the institute, Dr. W. E. Duncanson, has offered dynamic leadership, wise counsel from his long experience in developing countries and the sort of positive encouragement and example that only comes from one who has what Carlson has called 'systemic perspective'. New Guinea and the institute will be the poorer for his departure at the end of this year when he is to retire. Finally, the genesis and growth of the institute has taken place at a time when, very much belatedly, there has been widespread recognition of the need to train indigenous people for high level positions. Independence is very close and in developing countries it is always later than you think, but it has taken a long time for this message to sink in. The urgency of the problem is recognized now and an immediate result has been a scramble to demonstrate this awareness.

Accordingly, a host of new training institutions have emerged, with an expensive and unnecessary proliferation of educational and training agencies. Even lip service to co-ordinated planning seems now to have been abandoned, but that is another story.

It now remains to consider what sort of conclusions can be drawn from the brief case study outlined. Here it should be understood that it is not the writer's intention to draw conclusions that are specific to Papua and New Guinea. Rather it is hoped that certain broad general principles related to planning for effective education in any context might be identified. As was suggested earlier, in a developing country educational problems and issues often appear in sharp relief. Hopefully, therefore, it is suggested that we might be reminded of the following intervening factors.

1. Educational planning is constrained and influenced by political considerations, both national and international.
2. Educational planning is constrained and influenced by such sociological factors as the occupational status and aspirations of its practitioners, professional interest groups and the prevailing societal attitudes and values of the population served.
3. Educational planning is systemic. No one part of the educational system is independent of the others.
4. Educational planning is influenced and constrained by social, economic and demographic pressures in the society served.
5. Educational planning is influenced and constrained above all by psychological and even anthropological pressures.

There are doubtless other influences and constraints, but this list suggests that educational planning involves political analysis, psychology, economics, demography, sociology and anthropology. And of course you would have me add educational expertise. However, it should be pointed out that in the example cited in this paper—the planning of tertiary technical education in Papua and New Guinea—while the work of educationists is in evidence, unless I am seriously mistaken, professional experts from other social science disciplines have not played a significant part. Interestingly enough I have not met any such experts or heard their views on educational planning at this conference, at which point, enough. I would only add this. Tradition and tabus are still critically important in New Guinea, however, technology is being imposed on this society and a culture that has existed for centuries is disintegrating before it. In Western terms we are achieving success but can we educationists sincerely believe that we have really planned for effective education in the Territory, and for that matter, what of other far more familiar places?

COMPUTERS IN AUSTRALIAN EDUCATION—A COMPLETE SYSTEM

B. S. ABRAHAMS, M.SC., DIP.ED., M.A.C.E.

IBM Australia Limited

I wish to state my belief that the use of computers in education is *not* justified unless they increase the efficiency and quality of the education process. However, I firmly believe that computers, together with careful systems planning *can* increase the efficiency and quality of education.

In this paper, I will describe as I see it the applications of computers in primary and secondary education as a complete computer system. What I will be saying is pertinent, not only to state school systems, but also to independent schools which could band together to share computer facilities.

The major application of computers in education has up to this stage, been limited to tertiary institutions; their use in primary and secondary education has been minimal.

A study undertaken by the French Government and the French computer industry has predicted that in thirty years, the amount of computer usage in education would equal the total of computer usage in both industry and science. The implication of this staggering prediction is that the rate of growth of computer applications in education will be far greater than the rate of growth of computing in general.

There are three major areas of computing applications in education:

1. Education department administration
2. School administration
3. Computing in the classroom.

In practice, there is a considerable overlap.

1. Education Department Administration

The highly centralized education systems of Australia are some of its largest single 'industries'. In N.S.W. the education system costs around $500,000,000 per annum; it involves around 35,000 teachers and 800,000 students. The problems of administering such a system are immense. Just as computers have been used successfully to administer large industries, so computers can aid in administering an education system.

Already the N.S.W. Education Department and other state education departments have been using computers in a wide variety of applications for about a decade. However, their potential use is far greater. At present the areas of computer usage are mainly in the processing of public examinations and of teachers' payroll.

The major part of education departments' records of teachers, schools and students are still kept by inefficient manual systems that are difficult to maintain and administer. In addition, these records are kept in a variety of places and contain a vast amount of repetitive or redundant information; teachers' records are kept in half a dozen different sections of the department, varying from salaries branch to area office, while most students' records are kept in schools.

From these records, flow a large part of the day-to-day administering of the education system; teacher placement, inspections, transfers, promotions, school building, maintenance, student reports, scholarships and so on. Also, these records form the only basis for effective educational research and planning.

It is in the area of record-keeping and its subsequent processing, that the computer has a great future application in education. (See Appendix A.)

The conversion from a manual to a computer system by the education system has many implications to the classroom teacher:

1. In reference to teacher records,
    (a) the teacher does not need to fill in as many forms;
    (b) the education system responds more quickly to the individual teacher's request; for example, delays are minimized in payment of salary following a transfer (at present, records in salaries branch may be delayed in their update);
2. In reference to student records,
    (a) the teacher has an efficient means of tracing his students' background in his subject;
    (b) the students' reports are more efficiently generated;
    (c) the teacher gains a broader knowledge of the whole education system.

Detailed records kept by a computer are referred to as a 'data base'. There are many problems associated with the setting up of an education data base. As yet, no state education department keeps all its records on a computer. The N.S.W. Department of Education are currently investigating at the Systems Development Institute of IBM in Canberra, the practicability and implications of setting up an education data base of the N.S.W. education system. The results of this project will be published early next year.

2. School Administration

If all of the records of teachers and the students in a school are kept on a data base, much of the clerical work of the administrators and teachers is avoided. The central education computer virtually acts as a service bureau for each individual school. The major areas of application are:

1. Student reports

2. Term staff returns

3. Timetables.

Currently, there are around fifty secondary schools in Australia that use a computer in producing student reports. These schools have found that the advantage of using a computer in this area is the saving of teachers' professional time at each reporting period. The major time saving is in the avoiding of passing reports from teacher to teacher and the transcription of marks from one book to another.

The completion of the term staff return by the principal is a chore that can take up to a week. Much of the information contained on the staff return is repetitive information about the school, the teachers and the students—information that the department already knows. In a computer system, the school would provide at the beginning of each year, information about new teachers and students, the classes in which each student is enrolled and the classes that each teacher takes. This information is sufficient to produce class lists and provide the education department details of class sizes and teaching loads—all the information that is required for the staff return. At the end of each assessment period, teachers would write student assessments on the class lists and any changes would be recorded, student reports would then be printed and returned to the school.

One of the first questions that teachers ask about computing is 'when will there be developed a computer system for producing school timetables?' The design of a good school timetable is a difficult task; many schools do not produce a timetable until well into first term. However, a really efficient timetable designer can produce a good timetable in less than a week. No computer system can expect to do better than this.

The timetable problem is as old as computing; the number of combinations of possible timetables for a school, is astronomical and even too large for a computer to consider every one. Also, the various constraints placed on the timetable by the school may produce no solution. The best that a computer can do in solving the timetable problem, is to produce a number of different solutions and leave the final choice to the teacher. I am yet to be convinced that a computer can produce better timetables more quickly for most Australian high schools, than a good manual system.

3. The Computer in the Classroom

The use of the computer as an aid to teaching and learning in the classroom is a very exciting development in education. I wish to distinguish between Computer Assisted Instruction (CAI) and Computer Aided Learning (CAL); CAI implies the question, answer, branch as in programmed learning and is particularly useful in the teaching of basic skills and in diagnostic and remedial education. CAL implies a greater participation of the student in the learning process.

The most ideal medium is a computer terminal of typewriter-type or visual display. Experiments in many subjects can be carried out on the terminal rather than in the laboratory; simulated games can be played.

In other words, the computer terminal is the medium for instant demonstration of basic principles of any subject. (See Appendix B.)

The means for programming these simulated models and experiments can be any higher level programming language such as FORTRAN or BASIC; however, a new programming language called APL (A Programming Language) is the most appropriate language in education. APL is primarily a mathematical language faithful to theorems of mathematics; it has been developed as a programming language for a computer, but it contains no 'key words' and makes the computer transparent to the user. This implies that the teacher can describe a problem or an experiment in APL and then enter the algorithm into the computer terminal; the problem or experiment can be tested by the student who learns by doing and understanding.

It is not necessary for each student to be seated at a terminal. All that is required is a single terminal placed near the teacher's desk with a closed circuit television camera monitored on the output of the terminal so that all students can see the results.

APL is already being used in this environment in a number of overseas schools and universities. At the University of N.S.W., a heat exchanger experiment in the Department of Mechanical Engineering, has been entered by APL; rather than take a whole afternoon to do the experiment in the laboratory, and maybe get misleading results due to an inexperienced technique, the student takes around eight minutes for the computer simulated experiment. The time saving and the more dramatic understanding by the students has been highly praised by both lecturers and students.

The terminal is a highly versatile educational tool for the use of the classroom teacher. Not only can he use it for demonstrating principles in his subject while teaching a group, but also, he can use it as a laboratory for his students; the records of each student's experiment can be kept internally in the computer, thus further assisting the teacher in his classroom administration.

Another area of the application of computers in the classroom is in the testing of students. I do not refer here to objective testing on score sheets and marked by the computer. I refer to providing the classroom teacher with a set of graded test items from a bank of test items, classified according to accepted educational objectives. The test items would be graded according to difficulty and the results of the test could be standardized and compared with the overall student population. The library of test items would have previously been written and tested by experienced teachers.

With the possible end of public examinations, this application of the computer in the testing of students' progress, goes a long way to ensuring a comparable standard of education to all students throughout the education system. The N.S.W. Department of Education are conducting research in this application.

4. The Implementation of a Complete Education Computer System

The major component of a complete education computer system is the data base. Problems that need to be examined carefully are:

1. The collection of data efficiently, and the updating of records.
2. The retrieving of information from the records without delay.
3. Security and civil liberties.

All of these problems exist with present manual methods; it is the speed and efficiency of the computer that highlights each one.

The most efficient method of collecting data and entering it into the computer system is the use of the type-written or hand-written document as the input to the computer. Optical character readers exist today that will read hand-written characters and type-written characters of a number of different fonts. The traditional means of input to the computer, cards produced from a key punch and verifier, is slow and expensive and inappropriate for such a large system. Another form of input that is very suitable, is entering the data directly into the computer from a remote terminal. (See Appendix C.)

It is no use keeping up-to-date records that cannot be accessed and processed to answer day-to-day questions of teachers and administrators. The data base must be flexible enough to produce answers, not only to known questions, but also to questions that may not yet have occurred.

It is absolutely necessary that an education data base can be accessed only by authorized people. Some people may be authorized to access the complete data base, others only a portion of it. The means of access must also be secure; for instance, some questions could only be answered from a single terminal placed in the Director-General's office.

There is always a danger of misuse of computer data bases. The moral aspects of keeping records on a computer are necessary to consider in the design of an education data base. For instance, I believe, it would be an infringement of civil liberties to keep secret information about individuals; it would be desirable if teachers were given an annual printout of their file so that errors can be detected and erased. It is likely that centralized data bases will be the subject of protective legislation in our parliaments; this has already occurred in the United States and other countries.

5. Costs

The Bank of N.S.W. has equipment to the value of approximately $10,000,000, Qantas around $17,000,000, the TAB of N.S.W. about $7,500,000. The computer hardware costs amount to less than half the total costs of operation including people and office space. Yet each of these enterprises justifies this large cost with even greater savings.

The education industry in each state is even larger than these companies in terms of annual expense and manpower. It is not easy to measure the benefits of a more efficient education system in economic terms. What are the implications of increased efficiency caused by the greater use of computers? The following table gives a simplified view:

Result	Cost Saving
1. Higher quality of learning	A more highly trained workforce in the community
2. Less industrial friction between teacher and employer	More satisfied teachers, lower resignation rate
3. More efficient record-keeping	Fewer mundane clerical jobs, better planning.

Consider the resignation rate of teachers at present in N.S.W., which has risen from nine per cent a few years ago to thirteen per cent last year, and is still rising. If this rate of growth can be slowed by a more efficient administration system, say, by one thousand teachers each year, then one thousand fewer teachers need to enter the system each year. The cost savings in teacher training and recruitment are very large.

A 'complete' education system computer system would have a large central computer, terminals in area offices and a terminal in each high school; this would be a large system, of comparable size to the three companies mentioned previously. In such a widespread system, transmission costs are high. In total expense, the cost of operating such a system could be up to $5,000,000 a year for the State of N.S.W. for example; yet this is only one per cent of the present total education budget of the N.S.W. education system.

Summary

I stress my belief that computers are *not* justified in education unless they increase the efficiency and quality of the education process. However, it is also my firm belief, that computers together with careful systems planning *can* increase the efficiency and quality of education.

The next decade should show a dramatic increase in the use of computers in education in:

1. Education system administration.
2. School administration.
3. Computers in the classroom.

The most dramatic development of computers in education is likely to be in the setting up of an education data base in which records of all aspects of the education system would be kept.

The costs of implementing a 'complete' computer system are small compared with the total cost administration; but the benefits from an increased efficiency and quality of education are considerable.

To the classroom teacher the increased use of computers can mean a reduction in clerical duties, a greater degree of communication with the education department, better industrial relations and more useful information. In the classroom the teacher has, in the computer terminal, a powerful teaching and learning aid.

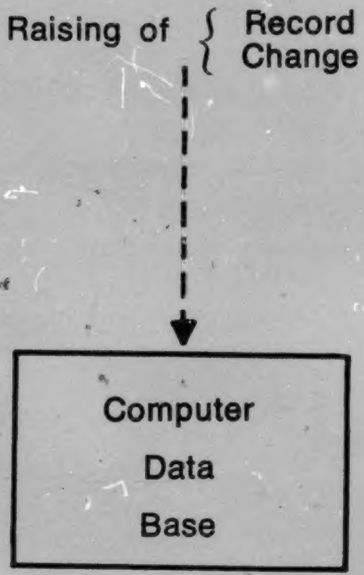
REFERENCES

The best local references are the ADP sections of the state education departments.

The most recent publication on computers in education is the Proceedings of the IFIP Conference on Computers in Education, Amsterdam, August 1970, North Holland Publishing.

The Systems Development Institute of IBM, Northbourne Avenue, Canberra.

COMPUTER SOLUTION

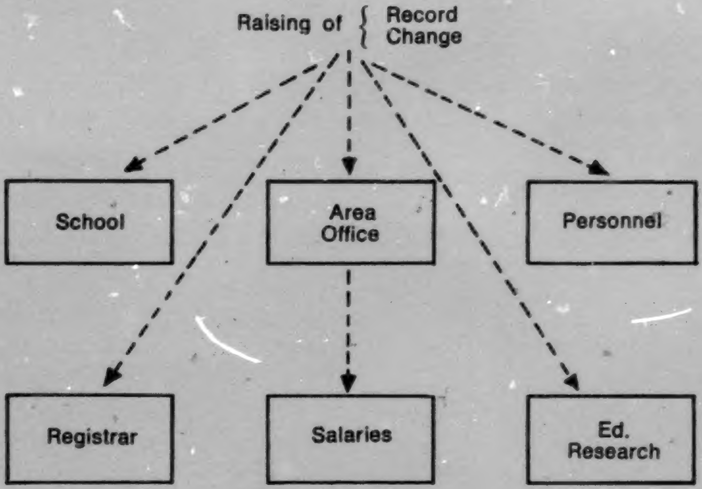


System Highlighted by

(i) Minimum of repetitive information.
(ii) All processing has current information.

APPENDIX A

RECORDS OF TEACHERS

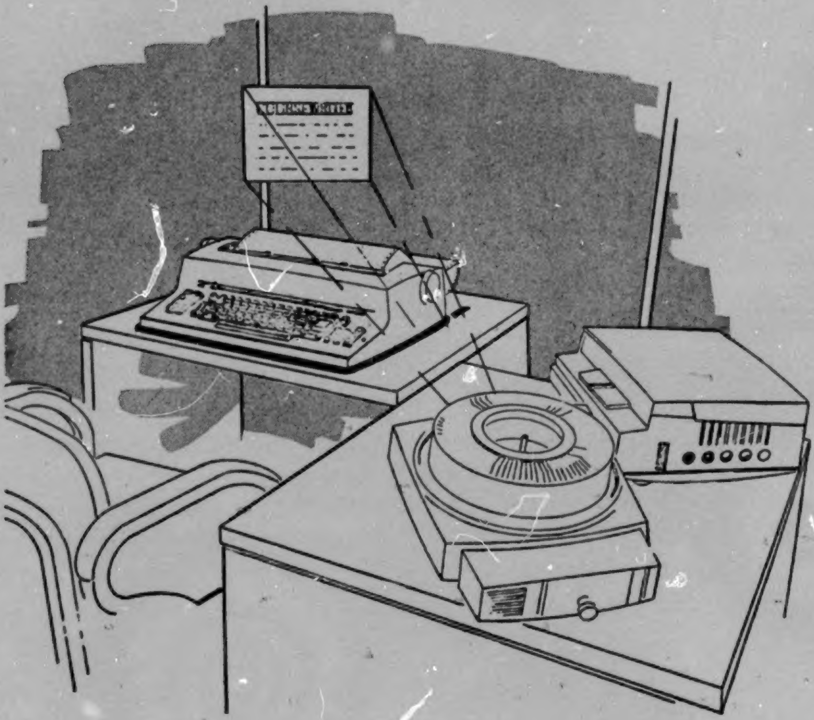


Records kept in many locations.

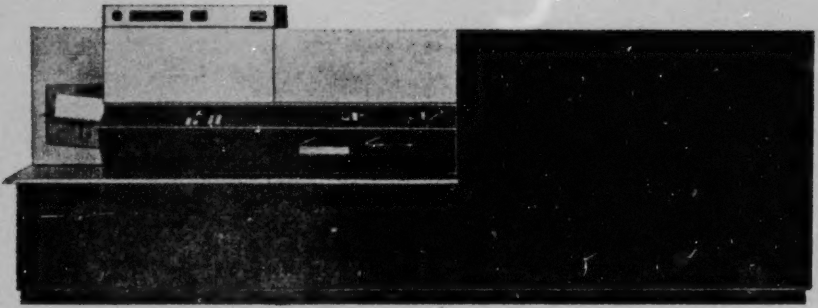
Systems highlighted by (i) Repetitive information.
(ii) Difficulty in updating all records simultaneously.

APPENDIX B.

CAI/CAL Typewriter Terminal with Slide Projector and Tape Recorder Attachment.



APPENDIX C



Optical Character Reader for reading Typewritten and Handwritten Documents.

Visual Display Terminal for entering Data directly into the Computer.

UNIT PROGRESS—AN ATTEMPT TO CATER FOR INDIVIDUAL DIFFERENCES

MARGARET PHILSON, T.H.C., M.A.C.E.

Curriculum Officer, W.A. Dept. of Education

An attempt has been made by some educators in Western Australia to move away from the 'graded' system which fits a child into a predetermined course based on chronological age. It is argued that the needs of the child, not chronological age, should be the determining factor in choosing a course.

We accept that each child is unique and that background, experiences, physical features, abilities, interests and perceptions differ widely. Do we accept that variability of performance is clearly apparent in the early stages of primary schooling and that this variability increases with increasing grades?

Figure 1 shows the variability of performance of a group of children in mathematics after one year at school.

	Unit 1	*Unit 2*	*Unit 3*	*Unit 4*	*Unit 5*
Commencing the unit	20	29	81	485	10
Midway through the unit	31	50	113	103	
Finishing the unit	9	68	728	23	
	60	147	922	611	10
	TOTAL — 1,750 Children				

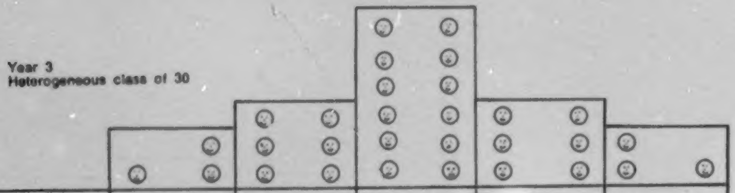
*A unit corresponds to a term's work for the average child.
Sample—25 Unit Progress Schools taken in alphabetical order.

FIGURE 1. *Progress in Mathematics of 1,750 children after one year at school.*

Source: Curriculum Branch, Western Australian Education Department, 1970.

It may be seen 401 children could not complete the first year course. These children commenced the following year (1971) at the point where they left off. 621 children showed sufficient ability in mathematics to allow them to commence work normally set down for second grade or their second year at school.

Figure 2 indicates that many different reading grade levels may be found in a third grade class.



Number of Pupils	3	6	12	6	3
Mental age	6	7	8	9	10
Reading grade levels	1	2	3	4	5

Fig. 2

Adapted from studies of the normal distribution of intelligence and its relation to reading achievement.

Source: Farker, D., Individual Learning S.R.A. Chicago (1963).

Again it becomes evident that all children in a given grade should not be expected to do only the work that is set down for that grade. Some children need a more challenging programme. Others benefit from progressing more slowly, with the opportunity of dealing with content and materials suited to their particular ability in a subject.

Figure 3 shows the variability of performances in a grade and the overlap between grades. The two vertical lines on the Grade Six distribution identify the average group.

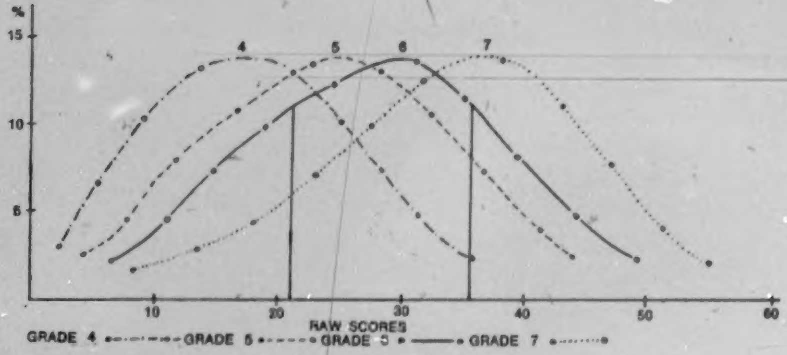


FIGURE 3. *Variability of performance within and between grades.* (*Grade norms: A.C.E.R. Reading for Meaning, W.A., 1965*).

Source: Secondary Education in Western Australia. Report of the Committee on Secondary Education (Perth, 1969), p.86.

It becomes apparent from Figure 3 that:

(a) the above-average Grade 6 pupils are all performing beyond the average level of performance of Grade 7 pupils.

(b) the below-average Grade 6 pupils are all performing below the average level of Grade 5 pupils.

Figure 3 illustrates the urgency to move away from the old graded structure which is present in many classrooms in Australia. It determines content for a child according to chronological age and not ability. Examinations are set so that children of the same age are given the same tests and are promoted or branded repeats. This often means that a child feels a failure because he is again located in the same room, often with the same teacher, while his friends proceed to new work and new surroundings. In many cases it is the latter half of the year's work that has caused difficulty and instead of continuing on he is faced with covering work again that he can manage.

Dissatisfaction with the rigid graded structure, and its restriction in catering for inter-student and intra-student differences, has led to the development of a plan in Western Australia known as Unit Progress.

DEVELOPMENT OF UNIT PROGRESS IN WESTERN AUSTRALIA

Unit Progress commenced in one school in Western Australia in 1963 under the guidance of headmistress Miss Janet Lindsay. In 1965 the Curriculum Branch became involved and schools which requested to work on the plan did so in conjunction with the branch. Now in 1971, close to one hundred schools and 16,000 children are working on the plan. It is noteworthy that these schools have all come on to the scheme through their own choice.

The Operation of Unit Progress

The term 'non-grading' has been used in the United States of America to indicate progress at an individual rate in a subject. This meaning has been assisted in fulfilment by class sizes which are frequently less than twenty and seldom over twenty-five. In addition to small classes and generous staffing arrangements there is an abundant amount of material available including excellent basic reading and mathematics series with associated graded work books and tests.

The situation in Western Australia is that most classes contain about forty children with a few classes above forty and a few below. Staffing is generally in the ratio of one teacher per class with very few examples of an extra teacher or a specialist teacher in the school. There is a serious shortage of materials in schools and children are often restricted in the use of appropriate work books because money is not available for their purchase. Book hire systems, present in many schools, allow basic reading series to be built up so that a child is not restricted throughout the year to the reader that appeared on his book list. This system will be changed in 1972 when schools will experience the benefit of free issue of reading material and teaching aids.

Non-grading in Western Australian primary schools had to be adjusted to meet prevailing conditions. The emphasis is on group teaching and the need for freedom of movement between groups. The attempt at a modified non-graded plan in Western Australia is known as Unit Progress.

The following is taken from a summary of a conference convened by A.C.E.R. in 1962 in which all states participated. *The proposal was used in developing Unit Progress.*

> 'The heart of the proposal is that grades in primary schools should be abandoned, and be replaced by classes *based approximately on age*. In these classes, subjects like reading, mathematics and spelling will be taught individually on a continuous progress plan, and a wide variety of standard of performance will be expected and accepted. In other subjects, which lend themselves more readily to framing a suitable course for the whole class, teaching methods will proceed along the more usual class and group lines, although every opportunity will be taken to allow fullest expression and development to the special interests and talents of children.
>
> 'It is reiterated that, in the basic primary school subjects, pupils in existing so-called graded classes are already working at a variety of standards. The proposal merely recognizes this, but treats it as an opportunity, not as a problem. The opportunity is to *ensure that the progress of individual children is along a carefully designed continuous programme (or syllabus) with built-in, self-checking tests that define mastery in operational terms,* and to ensure that the progress of none is impeded by the difficulties of the others.'[1]

Western Australia followed the conference proposal in the following ways:[2]

(a) The primary syllabus for each year in mathematics and reading was carefully divided into three sequential units, making a total of 21 units. Teachers were given Unit Outlines in Reading containing an indication of the sequence of skills to be taught together with placement of appropriate textbooks, supplementaries, useful aids and teachers' reference books. Similar Unit Outlines were printed for mathematics.

(b) Units 22, 23 and 24 were planned for above average children in co-operation with Superintendents of Secondary Education and Curriculum Officers so that there would be no 'ceiling' for those who progressed rapidly.

(c) Tests were developed by the Curriculum Branch to assist teachers in assessing mastery of each unit.

The emphasis in the Unit Progress plan has been on the breakdown of grade barriers so that groups of children may proceed at a rate suited to their ability in a subject. Figure 4 shows the formation of three groups in a class of children who are normally distributed in terms of their ability in a subject. Half the children are in the average group and about one-quarter in each of the below average and above average groups.

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[1] Bassett, G. W. *Each One is Different* (A.C.E.R., 1968).
[2] ibid, p.35.

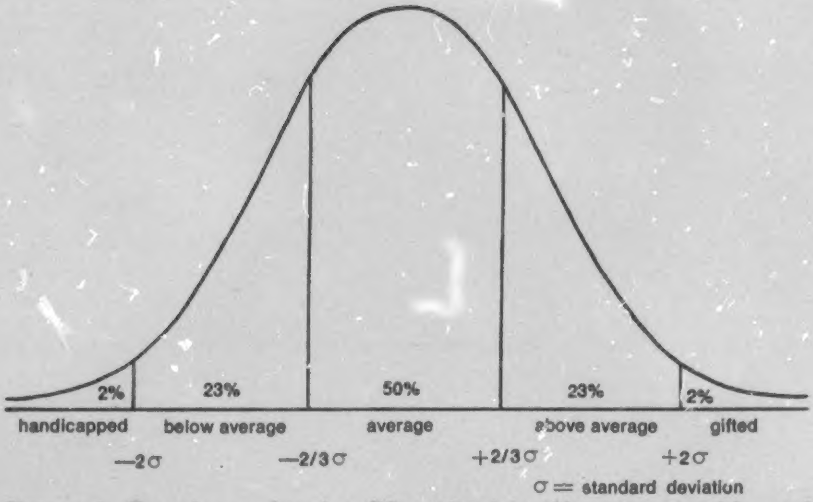


FIGURE 4. *Grouping a class for differentiated teaching: groups with equal ability ranges.*

Source: Secondary Education in Western Australia, Report of the Committee on Secondary Education (Perth, 1969).

Figure 5 indicates the way in which the three groups of children in Figure 4 may vary in rates of progress in a subject.

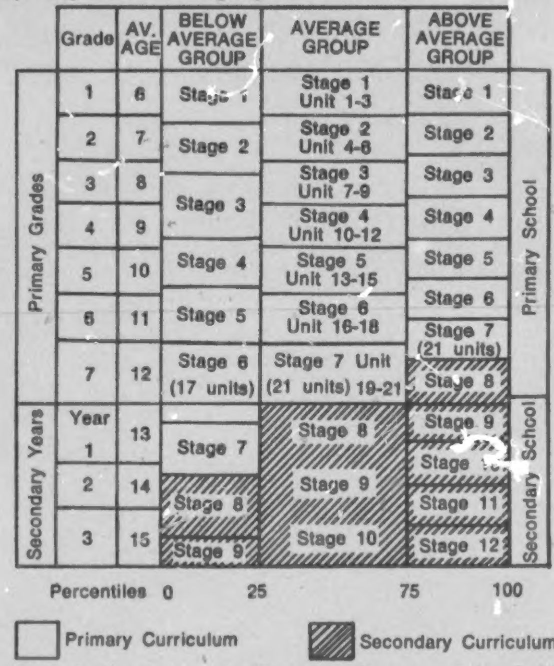


FIGURE 5. *Variations in Rates of Progress in a Subject.*

Source: Modified from Secondary Education in Western Australia. Report of the Committee on Secondary Education (Perth, 1969), p.87.

It may be seen from Figure 5 that under a Unit Progress organization:

(a) *Content* varies from group to group. The below average group will not attempt some of the units completed successfully by the average and above average groups. It is fair to assume that most children in the below average group will move into the 'Basic' group (i.e., below average students defined as being in the lower quartet of ability in the subject) at high school in that particular subject. The ability of the child in a subject is the determining factor.

(b) *Methods of teaching* vary according to the needs of the groups. The below average group, for example, may require greater use of concrete material and more opportunity to consolidate than the average or above average group.

(c) *Materials* used vary greatly between groups. What is appropriate for the above average child may not be helpful for the below average child. Reading books, supplementaries, laboratories, reference books, concrete materials and duplicated materials will vary according to the needs of the group.

Grouping Children

It has been found that many first-year children need the security of their own teacher for most of the day. In a school where there is more than one first-year group, it is possible to timetable skill subjects simultaneously. This enables an interchange between classes so that a child (or children) may join a group in another room which is working on an area more appropriate to his needs. Simultaneous timetabling may also be a useful organizational procedure in other years other than one. This type of interchange can only apply to those children who will not react unfavourably to a change of teacher.

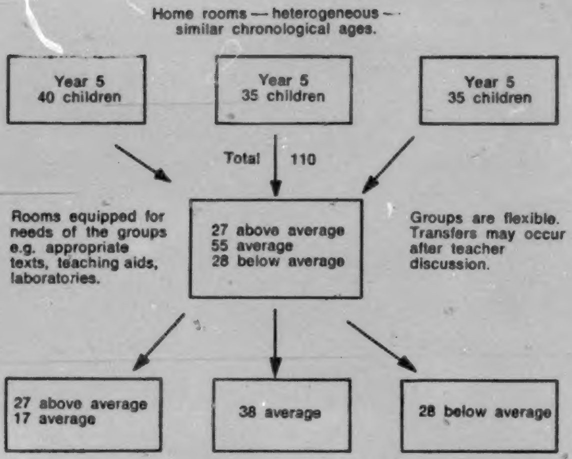
Co-operation in Grouping

There is a tendency in Western Australian primary schools to move away from the idea of a teacher working as an isolated unit with one class in one room for a year. Many feel that children will benefit from the outcome of frequent discussions held concerning:

(a) Grouping and flexibility of the groups

(b) Resources—materials, teachers, space

(c) Teaching preferences.


Home rooms — heterogeneous — similar chronological ages.
Year 5 40 children
Year 5 35 children
Year 5 35 children
Total 110
Rooms equipped for needs of the groups e.g. appropriate texts, teaching aids, laboratories.
27 above average
55 average
28 below average
Groups are flexible. Transfers may occur after teacher discussion.
27 above average
17 average
38 average
28 below average

Teaching methods vary according to the group.

FIGURE 6. *Cross Setting in Reading—Year 5.*

Cross Grading involves grouping of children in different school years according to ability in a subject. Many teachers prefer to regroup over two years only so that differences in chronological ages within the groups are not so great.

Flexibility of Numbers

It is important that the ratio of students to teacher may vary according to the needs of the group and the type of subject being taken. A teacher may work with five children (at one time) and later with eighty children. Flexibility needs to be a keyword so that *maximum use is made of personnel, materials and space.*

Evaluation

Tests are available in reading and mathematics to assist teachers in evaluating how much of a unit has been successfully mastered by a child. The result of the test, together with the teacher's knowledge of the child, determines readiness to proceed. The tests are administered only if the child has been given the opportunity to cover all aspects of the unit and has a reasonable chance of success.

If one area of a test (say spatial knowledge in mathematics), shows weakness, it is impossible to advance to the next unit while giving special attention to the area of weakness.

The number of Unit Progress tests in a subject average out to three per child in a year. These tests are not done at the same time, as Figure 7 indicates.

Below Average	Average	Above Average
9 children	18 children	9 children
JUNE	MAY	MARCH

Year 2—36 children—Unit 4 Reading

FIGURE 7.

The following is taken from the new Primary School Reporting and Recording Teachers' Notes used in primary schools in Western Australia.

> 'It is suggested that half yearly examinations be replaced by regular evaluations, both objective and subjective, throughout the year. Tests to evaluate performance at the appropriate levels for each child would take the place of the often irrelevant half-yearly examination for all. Reporting would be based on constantly accumulating class records and may then be done at different times in the year for different pupils. Unit Progress tests assist teachers to provide objective evaluations and carry out the new approach to recording and reporting being adopted in Western Australia.'

Unit Progress tests are administered in the following ways:

(a) *Individual Testing*

Sometimes oral sections of a test require individual testing. The content of the oral test paper may be given in many ways, according to the personal choice of the teacher. It is unlikely that more than twenty children in a class will be ready for a test at the same time.

(b) *Tests to be given individually in whole or part.*

Many teachers choose to plan ahead and provide the two or three groups in a room with material to work on appropriate to their progress while individual testing takes place.

Timetabling within a room could allow one group to work on mathematics (or reading) while the one or two other groups work on a different subject altogether. This allows the teacher to test a member of the group while the others continue working.

The ten-minute period before school could be used for testing. Some heads enjoy participating in testing because it assists them in gaining a knowledge of the children in their school.

(c) *Written papers* have been carefully designed to provide a situation that is useful for the child as well as to assist the teacher in evaluation. The tests can be given at more than one sitting.

Vocabulary has been included in the mathematics tests in line with current thinking that reading and mathematics need not be in separate compartments. Although average readers should not experience difficulty with the words, help is given when required. The written papers are given to help assess understanding of areas of the unit. Emphasis is placed on areas such as phonics or applied number, rather than on marks. 15/20, for instance, does not convey which area of a unit is weak or where remedial work is required.

Parents

The need for parent/teacher co-operation is essential in an organizational plan like Unit Progress. One of the most difficult, and yet one of the most important factors, is that differences must be expected between children of the same chronological age. Unless this is understood, a child can often suffer from pressure from its parents to achieve the same standard as a child of the same age who lives in the house down the street. Again, unless parents understand that individual differences exist, it is often the teacher who is said to have failed because some children in the class are on easier readers than the others. It is the responsibility of teachers to assist parents to understand that it is in the best interests of the child to be working on an area appropriate to his ability and development at any given time. Incorporated in this is the need for parents to understand that a child's progress in a subject is often seen in 'spurts'. Pressure put on children to achieve a standard that is too difficult for them can only result in frustration, fear and disciplinary problems.

Addresses by teachers on individual differences at parents' and citizens' meetings and at parents' day can assist understanding and co-operation. Short, duplicated notes to parents two or three times per year are valuable for giving information about the latest educational practices and the reasons for them. The parent-teacher conference is invaluable. Most heads of schools on Unit Progress have indicated that a conference between parent and teacher should occur at least twice per year to ensure close liaison and understanding.

One of the most important contributions of the Unit Progress plan, with its accent on children as individuals, is that it enables teachers and parents to work together in the best interests of the child.

Conclusion

It is a privilege to be a teacher, for one is working with the most important commodity a country possesses, its children. It is therefore important to do the job of teaching well for many lives are affected. To ignore individual differences, which have been proved to exist, is to know that the education of children is not all that it might be.

The removal of the rigid floors and ceilings of the graded system means that children do not have to experience repeated failure and that success is attainable with effort. Learning takes place most effectively when pupils are presented with learning opportunities in the form of material and tasks for which they are ready. A child must be rewarded for 'doing the best he can do'. The results of that 'best' may be different for two children of the same age but the same effort and sincerity are there and both children must be made to feel they have achieved something. Children are happiest at schools when they are meeting the expectation of their teacher and themselves. The danger lies in setting unrealistic goals for children that mean the expectations cannot be met and a sense of failure and frustration results.

Unit Progress does necessitate a very close look at the individual child and his development. It allows for changing rates of progress so that a child may progress in spurts. No child is expected to work at the same rate in all subjects. He may be working at two or three levels in as many subjects. Ability is the key to progress rather than progress determined by a chronological lock step grade norm. A recognition of basic differences in learning rate assists in eliminating the repeating of grades.

Some of the difficulties of unit progress can include those encountered in the actual mechanics of operating the scheme. Large classes make organizational problems fairly severe. It cannot be over-emphasized how much planning and discussion is needed before there is any venture into unit progress.

The difficulty of informing parents of pupils' progress after they have been long conditioned to the normal grade system is one that can cause problems.

There can be a danger of children being pushed too quickly. The safeguard here is to use the normal curve as a guide and, of course, records of the children which allow a prediction of the appropriate unit groupings of children.

It has been proved in a practical way by schools that these difficulties can be overcome. The results are rewarding, for children become happy, relaxed and feel a sense of achievement and this is what teaching is all about.

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THE GENERATION GAP IN ADMINISTRATIVE STRUCTURES

H. BEARE, B.A., M.ED., DIP.T., M.A.C.E.

Regional Education Officer, S.A.

This paper can attempt little more than clarification of a problem confronting organizations today, and the formulation of an hypothesis about the problem. I cannot be blamed for having no answers to the problem of the generation gap in administrative structures, for if I could solve the problem then I would be the most sought-after organizational consultant in the world! It will also be evident that I make no mention of educational structures as such, since that is a sub-topic, allied to this one, but requiring another paper.

GENERATION GAP

Let us look first of all at the title. The term 'generation gap' implies that a person born several decades ago may have a system of beliefs, or a set of values, or a bundle of behaviours—what Parsons calls 'values in action'—which may be out of phase with those of a younger person whose outlook has been moulded only by the one or two decades the latter has known. The overtones in the term suggest, of course, that the older person is more to be pitied; he appears as stolid, inflexible, rather pedestrian, and in the contemporary setting a little grotesque and clumsy, like the alligator, a product of the Age of Reptiles, which has somehow managed to survive into the Age of Mammals. For the issue of survival is implicit in the term 'generation gap'. The young person, a child of his modern times, is apparently able to move freely and in harmony with his environment; the older person has been snared by rapid change, and his apparent inability to adapt to a fluid situation causes the gap.

My thesis here is that the same kind of mismatching appears to be occurring with some organizations, especially with what the literature calls 'large-scale' or 'complex' organizations. For one of the problems of the adult who suffers the generation gap is that he cannot help himself. His own being has been so programmed that it seems to push in one (predictable) direction—and, what is more, apparently the wrong direction if one would listen to what the child of the times says about his times. In the same way older organizations, usually now grown larger and more complex, thrust to replicate themselves, repeating process upon process, unwieldy function added to unwieldy basic structure until they become awesome dinosaurs, slow-moving and with very little brain.

Or to be even more specific, older and larger organizations have a strong tendency to become bureaucratized, especially as they become larger, and as the articulation of their parts becomes more necessary for survival. And as they develop, the organization's managers appear to plan and add according to the bureaucratic concept. So the younger managers, instead of inheriting adaptive, self-renewing organizations, find themselves inheriting unwieldy bureaucracies. Worse still, the younger managers inherit all the cumbersome paraphernalia that seem to go with them—'line and staff', 'span of control' mechanisms, 'organization charts', 'departments' and 'divisions' and 'branches' and 'sections', the complicated nets of regulations, rules and procedures both inter- and intra-departmental.

It comes as a shock to many that there *are* other models besides bureaucracy—and perhaps as a bigger shock to be told that the bureaucratic organization may find it very difficult to survive the next three decades. Unhappily, although this is a lesson which some industrial and commercial enterprises have already learnt, government instrumentalities seem slow to learn because, without the profit-making incentive, they can grow senile in ignorance.

ADMINISTRATIVE STRUCTURES

The term 'administrative structures' refers to the formal organizational patterns whereby a system gets its work done, or—perhaps more accurately—whereby the decisions made within the system are recorded, acted upon, and then stored in the system's memory bank. Administrative structures are fairly easy to identify in a bureaucracy, and are usually given a symbolic representation in an 'organization chart'. However, from the standpoint of some modern management theories it may be impossible to draw an organization chart for some recently created and highly effective business firms. Their administrative structures are not so easily recognizable nor as permanent.

It is basically this issue which is the message in this paper. For the fact is that 'old' organizations, administered by means of distinguishable bureaucratic structures, evidence a generation gap from the 'young' organizations—which have temporary structures and which make and unmake their organizational set-ups to suit the demands of the job.

Without more ado, then, let us take a clearer look at the generation gap in the administrative structures of 'old', 'middle-aged', and 'young' organizations.

TIME ZONES BASED ON THEORIES ABOUT ORGANIZATION

Several writers have shown how, over the past seven decades, various schools of thought concerning the nature of organizations have grown up, have had their day, and have been superseded.[1] E. G. Bogue, in what he calls a 'conceptual synthesis for the educational administrator', identifies the following movements:[2]

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[1] See, for example, the following four:
Faber, Charles F. and Shearron, Gilbert F. *Elementary School Administration: Theory and Practice*, New York, Holt, Rinehart and Winston, 1970, ch. 4.
Yuill, Bruce F. *Organization and Management*, Sydney, West Publishing Corporation, 1970, ch. 1.
Blau, Peter M. and Scott, W. Richard *Formal Organizations*, San Francisco, Chandler Publishing Co., 1962, ch. 2.
Campbell, Roald F., Corbally, John E. and Ramseyer, John A. *Introduction to Educational Administration*, Boston, Allyn and Bacon, 1966, pp.66-78.

1. *The 'Scientific Management' School.* This was born in the late 19th century, and flourished in the early 20th century under Frederick W. Taylor. The school based its beliefs on Adam Smith's ideas about the economic man, and on the simplistic notions that money is man's principal motivator, and that man in an organization is rational and behaves rationally. The movement finally waned throughout the 1940s.

2. *The 'Human Relations' School* was a reaction to the scientific management school, and rested on the notion that the diversity of human needs affected the conduct of organizations. By all means have a formal and rational structure, they would say, but at least recognize that informal and social networks, man's irrational behaviours, and so on are real determinants of organizational decision-making and of outputs. The movement came to its height in the 1950s.

3. *The 'Industrial Humanism' School,* which Bogue calls the current school in management theories, goes beyond mere human relations. It is based on the psychologist Maslow's notions about man's hierarchy of needs, principally his need to become self-fulfilling or self-actualizing. So an organization which builds a discrepancy between institutional goals and the individual and personal goals of the people in the organization will become dysfunctional. On the other hand, an organization may itself become self-actualizing as it allows its members to become self-fulfilling.

4. *The 'Management Science' School* could be regarded as a parallel but complementary movement and is described by Mueller as 'the application of scientific, systematic, and technical approaches to business problems'.[3] Based upon empirical research on organizations, and borrowing from allied fields—cybernetics, economics, social sciences, anthropology, systems analysis and so on—the movement endeavours to apply theoretical constructs to organizational behaviour in order to devise both a connected theory about human organizations and more effective management models for practical usage. This movement is in full flood overseas.

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[2] Bogue, E. G. 'The Context of Organizational Behaviour: A Conceptual Synthesis for the Educational Administrator', *Educational Administration Quarterly,* Vol. V, No. 2, Spring 1969, pp.60-64.

[3] Mueller, Robert K. 'The Managerial Gap—Traditionalists versus Scientists', *Personnel* 46 (6), November-December 1969, pp.8-21.

An influential essay by Davies and Iannaccone,[4] published in *Teachers' College Record* in 1958, which discussed the ferment in the study of organizations over the past half century, identified three time zones in the development of these movements in the study of organizations. They called them:

The 'Technical' Era

The 'Human' Era

The 'Conceptual' Era.

It is easy to take the next logical step beyond the enunciation by Davies and Iannoccone, and postulate that business organizations which came into being during any one of these eras would, at least wholly and still in part, be patterned by the prevailing management climate and the kind of administrative structures in vogue at the time. So organizations which grew up in the 'Technical' Era we may call 'old' organizations (since they are the longest established). Those patterned by the 'Human' Era are now 'middle-aged' organizations, and those recently born in the 'Conceptual' Era we will call 'young' organizations. Albeit simplistically, let us characterize each of these in turn.

The 'Technical' Era and Old Organizations

Davies and Iannoccone describe the 'Technical' Era as follows:[5]

> The era of Taylorism and earlier, in industrial organizations especially, can be seen as a period when the technical aspects of organization were the centre of interest. Organizational forms were justified by logical factors rather than psychological or sociological factors. Problems . . . were . . . tackled from a technical and purely logical angle.

Organizations which are more than fifty years old, which were established before 1930, which came into existence during the period of F. W. Taylor and the writers on 'scientific management', are most likely to embody the characteristic patterns of that school of thought. What were those patterns?

The school grew out of the Industrial Revolution which had reached its height by the turn of the century. For the first time in human history, people began to cluster in large urban conglomerations after a flight from the land. The factory replaced the forge, machines took over repetitive operations once performed by hand (there is something ironical in our term 'manufacture', which literally means 'made by hand'), the production line replaced the village craftsman, and mass production was made possible by mass labour. Industrialization meant more than mere mechanization. It involved the organization of thousands upon thousands of people into co-ordinated groups who could work together (literally 'co-operate') to ensure the output of a product.

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[4] Davies, Daniel R. and Iannaccone, Laurence 'Ferment in the Study of Organizations', *Teachers' College Record*, November 1958, pp.61-72, and reprinted in Nolte, M. Chester *An Introduction to School Administration*, Selected Readings, New York, Macmillan, 1966, pp.356-368. The page references in following notes refer to the latter.

[5] ibid, p.358.

The pattern of organization which emerged from the industrial operation is now known as 'bureaucracy', a term attributed to the German sociologist Max Weber, and meaning 'control by bureaux, or by specialized departments'. Its strength was also its weakness, for bureaucracy is, as Weber described it, a logico-rational system of organization.[6] It was neat, tidy, and it noted each operation in the chain of production, for its systematically allocated each operation and each area of activity to a specialized group. It assumed that the persons in the organization would operate like the machines; we still use the analogy of calling a person a 'cog in the machine'.

So organizations born in that era—'old' organizations, we have called them—will probably have about them these common features of bureaucracy:

1. *Hierarchy of authority.* All the power resides initially in the man at the top, but he may delegate it down the pyramid. Essentially, however, a bureaucracy is the outgrowth of a one-man outfit. The man at the top of the pyramid of power has the final say. The hierarchy of positions in the pyramid below him give rise to 'status authority'; one's power to make important decisions depends on the position one occupies in the tower. So we can assume that the sense of hierarchy will remain strong in an 'old' organization.

2. *Division of labour*: The operation to be performed by the organization is subdivided into logical pieces, and these sub-functions are allocated to the bureaux. Such division of labour leads to specialization of functions within the organization, and one's value to the organization is increased as one builds up an operational expertise in one's specialist area. So we can assume that the old organization will remain departmentalized; few men in it are involved with its overall objectives.

3. *Government by rules and regulations*: The organization, in order to integrate and co-ordinate its parts (especially as it grew bigger), had to devise over a period of time a set of standardized procedures from which no person could depart. So the bureaucratic system generates a mesh of rules and a network of policies which govern everyone in the organization. The larger the organization, the more bewilderingly extensive becomes the web of rules. We can assume, then, that the old organization will be rule-bound, and will have a set of formalized, written procedures and regulations which are binding on all in the organization.

4. *Impersonality*: Bureaucracy ensures by its very nature that the system will show neither fear nor favour to anyone. The rules apply to everyone, and are thus a strong guard against patronage. Because of the division

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[6] See, for example, Blau and Scott, op. cit., pp.27-33.

of labour, no one person can force the firm to serve sectional or personal interests, since all in the organization are interdependent. It is a self-checking system. The hierarchy of authority ensures that every request has to be passed up the tower, and undergo surveillance at each level. So we can assume that the old organization will remain impersonal, at base coldly rational in fitting individual clients into categories, and will dispense its services like patent medicines rather than like individually prescribed potions.

In short, then, 'old' organizations are bureaucracies evidencing a fairly high degree of centralization in decision-making, with a pyramidal type of organization, clearly defined departments each performing specialist operations, a set of written and quasi-legal regulations to effect co-ordination and the organization's *modus operandi*, and for which it is possible to draw up a fairly accurate and formal 'organization chart', which puts everyone under the supervision of someone else.

Those firms and organizations which came into existence before 1930 will probably still exhibit many of these bureaucratic characteristics, at least as vestigial traces in the organization. In this group of 'old' organizations would come most government departments, which largely developed their strength between the two world wars; some large industrial complexes, particularly the steel and motor car manufacturers which brought the industrial revolution to its height and also produced the Great Depression of the 1930s; and some of the long established business houses such as now operate large emporia. These organizations are likely to exhibit a fairly high degree of bureaucratization, because it was this form of organization which typically brought them to their present state.

The 'Human' Era, and Middle-aged Organizations

Davies and Iannoccone describe the 'Human' Era as the period when organizational students began to see '*people* as the content of organizational study'. In this period, they maintain, there developed 'a more flexible concept of organization, with emphasis on people and psychological and sociological forms'. In the new movement 'human skill is contrasted with technical skill; working with people versus working with things'.[7]

William Whyte (in his *Organization Man*) declares that 'the father of the human-relations school is Elton Mayo'.[8] Mayo began with a concern for rootlessness (anomie) and the lack of belongingness in the worker in industry. In 1927, he and his colleagues began the now celebrated studies at the Western Electric Corporation's works at Hawthorne, Illinois. Their progressive findings began to blow holes through the scientific management principles which had been enunciated by Taylor. According to the latter, improving the physical conditions at the factory, and even more the addition of monetary incentives, would improve productivity; but they did not. Instead the finding suggested the important factors in productivity were social, not physical.

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[7] Davies and Iannaccone, op. cit., pp. 359, 368, 358.

[8] Whyte, William H. *The Organization Man*, London, Penguin Books, 1963, p.36.

In consequence theories on organizations began to concentrate on the 'variable human' in the organization—in fact, the box and dice associated with a bureaucratic form of management—went under the hammer. Attention tended to turn to things like 'feedback', informal rather than formal systems, 'power structures', 'decision-making', the meaning of 'authority', organizational 'climate' rather than organizational form, in short to the 'human side of the enterprise'.

As a result of these explorations, we are likely to find both nouveau-ism and revisionism in the 'Human' Era. Those organizations which came into existence between the Great Depression and the end of the Second World War or even up to the 1950s are likely to display less severe adherence to formal bureaucratic tendencies than the 'old' organizations. In any case, it seems likely that the Depression and the war combined would have limited the number of large-scale organizations born in the 'thirties and 'forties.

Victor Thompson has stated that 'modern bureaucracy is an adaptation of older organizational forms altered to meet the need for specialization'. He says that we will find modern practices grafted on to old stock and so modern technology and survivals of the Genghis Khan trying to live side by side. In 'middle-aged' organizations, then, we are likely to find complex modernity added to a structure designed essentially along simplistic lines for a simple organization living in simpler times.[9]

The 'middle-aged' organizations, therefore, are likely to be characterized by a consensus-type management, probably a managerial board rather than a 'top man' pyramidal organization. Much of its business would be handled by means of committees. There will be a tendency towards democratic decision-making. Its agencies will be allowed to take decentralized action: that is, the local departments and units will be given wider power and autonomy than is characteristic in a formal bureaucracy. And there will be a strong commitment to in-service and in-house staff development.

Revisionism would also be apparent in the self-renewing activities of the 'old' organizations, especially those which depend for their life on the making of profits. However, it is likely that the service organizations (and here we would have to include government departments) would not have the same imperative to change, would change late rather than early, and then only in order not to appear outmoded or quaintly old fashioned in their operations. The changes in the organizational structures in these cases would be justified by the typically bureaucratic reasons to explain change, namely to increase efficiency and economy.

But revisionism is a change which affects usually only the surface of things, for 'old' organizations retain in them people with long service in the same organization, and long association generally implies also that the person has climbed his way painstakingly and faithfully up the executive ladder. In spite of itself, then, it is unlikely that in style or *modus operandi* or even in basic orientation an 'old' organization will change radically, that is, at the roots level.

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[9] Thompson, Victor *Modern Organizations,* New York, Alfred Knopf, 1961, p.5.

The 'Conceptual' Era and 'Young' Organizations

Davies and Iannoccone argue that the third era is a conceptual one, that the teachers and designers in organization are now developing a substantial body of theory about organizations, and that we are now in the age when it is possible to use these theorems in the design of administrative structures. The writers were good seers, for they were making these predictions more than ten years ago and at a time when they did not have access to the large number of findings from the studies of organizations which have been conducted during the last decade.

We ought to be able to find among the organizations operating in the world, then, some 'organizational hippies', that is, businesses which have taken the modern theories seriously and which have built their structures and their procedures on such acceptance. Just as a breed of churchmen have now grown up who see the saint as a rebel, Christ as the archetypal radical, and the church as an outdated human artifact; just as we find a group of intelligent young adults who refuse to take patriotism, conscription, the Establishment, and social conventions as anything more than historically dated human fads or phases, physical expressions of relative rather than absolute virtues; so also we should be able to find a group of swinging managers and business enterprises which have thrown away the conventions of bureaucracy, with all the paraphernalia of hierarchies, organizations charts, line and staff, and so on. How do we recognize these organizational flower people?

In the first place, the 'young' organization is likely to be *anti*-bureaucratic; for whereas the 'middle-aged' organization was administratively revisionist, the 'young' organization will tend to be revolutionary. For the first time this century it will have become apparent that there *are* alternatives to the bureaucratic model (in any of its old and revised forms), and that the alternatives may be much preferable to bureaucracy.

For the critics of bureaucracy have made these claims about it. First, while it makes for efficiency, it is now too slow a process. Not merely action but *speed* of action controls survival in today's competitive world.

Secondly, by its very nature, bureaucracy creates groups of people who are jealous of their area of expertise. When under attack from forces outside the organization—or even from within it—the bureaux retreat into themselves, display 'bureaucratic defensiveness', close their ranks, become secretive (an action very easy to do when only the specialist bureau has access to its own workings), and fight to maintain the status quo. Bureaucracies are therefore maintenance organizations. What we need now are developmental organizations.

Thirdly, the bureaucratic form is unwieldy and self-defeating. The larger the system grows, the more complex become its quasi-legal working rules, until one needs to be a system lawyer to know how to get things done through the system. So arise the legends about bureaucracy like, 'It's not *what* you know, but *whom* you know that counts', 'the public service mentality', and so on. The product becomes the victim of the procedure.

Fourthly, because there are so many personal investments in the administrative structure—after all, one's power in the organization is dependent on one's hierarchical status—it is very difficult to change the organization itself. To change the statuses and the hierarchies, or even to create different patterns of specializations or departments, constitutes a threat to the persons in the organization. The people in the bureaucracy are the real opponents of change. So in a world of high-speed change, the bureaucracy has an endemic inability to adapt to rapid environmental change. The 'young' organization will probably react against these tendencies.

Of all the writers on organizations, it is probably Warren Bennis who has most clearly drawn attention to the generation gap between 'old' and 'young' organizations. He claims that the business world is now 'beyond bureaucracy'.[10]

> It is my premise (he says) that the bureaucratic form of organization is becoming less and less effective: it is hopelessly out of joint with contemporary realities: that new shapes, patterns and models are emerging which promise drastic changes in the conduct of the corporations and of managerial practices in general. In the next 25 to 50 years we should witness, and participate in, the end of bureaucracy and the rise of new social systems better suited to twentieth century demands of industrialization.

So the young non-bureaucratic organization will have some predictable non-bureaucratic features. The new organizations will deliberately destroy the impression of hierarchy. That is, a member of the organization will be in a fluid situation, and not frozen into a status role set in a pyramid of power. The 'young' organization will allow men to occupy a variety of statuses and roles, being leader in one task, a team member in another, in situations which are made around particular tasks and in systems which Bennis calls 'temporary'.[11] For the organization, chameleon-like, must be able to make and unmake itself around problems to be solved and tasks to be performed.

The organization, being task-oriented and problem-solving, will function by calling on the special skills and expertise of the members of the organization regardless of things like seniority, status and length of service. So it will use its labour force on grounds of technological and specialist skills, rather than by placing them in bureaux, for the bureaux inability to share across a range of activities is the characteristic against which the new organization will endeavour to compensate.

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[10] Bennis, Warren G. 'Beyond Bureaucracy', *Trans-Action*, Vol. 2, No. 5, July-August 1965, p.31.

[11] Bennis, Warren G. 'The Temporary Society', *The Journal of Creative Behaviour*, Vol. 3, No. 4, Fall 1969, p.2[illegible].

A bureaucratic tendency which the new organization will strive to avoid is the tight mesh of quasi-legal specifications which hamper free-wheeling and risk-taking executives. So the new organization will pay little attention to test cases, the setting of precedents, or conformity to the norm. Rather, cases will be treated on their merits, and the individual differences of task or client will be allowed (as much as is prudent) to affect the organizational outcomes. It will buy executives who are alert, innovative, risk-taking, responsibility-grasping, sensitive, and courageous: and will encourage them to be themselves.[12]

Whereas the bureaucracy puts the individual alongside the rule and judges accordingly, the new organization sets out to serve the client, is bound to serve the client's need and is committed to take his part.[13]

The bureaucracy encourages each member of the organization to develop a technical competence in his job, and in the administrative procedures affecting it. But this builds up a sense of exclusiveness, and gives rise to the bureaucratic pathologies called 'empire building', 'nest feathering', and 'running a tight ship'. The bureaucracy becomes then a cluster of empires, an uneasy federation of sovereign states. The new organization rejects this notion, and stresses co-operation, sharing, allegiance to one's profession rather than narrowly to one's organization.

This well-known quotation from Warren Bennis is a succinct summary of the young organization we have described.[14]

> Adaptive, problem-solving systems of diverse specialists, linked together by co-ordinating and task evaluating specialists in organic flux—this is the organizational form which will gradually replace bureaucracy as we know it.

To help it in its tasks, the 'young' organization has an array of new managerial hardware and software, many of them the consequence of computerization. For example, one such is P.P.B.S. (Planning Programming Budgeting Systems), which introduces the possibility that managerial controls over spending and budgeting can be exercised by the computer.[15] Concepts like 'span of control', for example, could become obsolete under such a system. In older systems, the control over people had to be exercised by people, who were subject to the fallibility and limitations of human memory and personality. A computer, however, can have a much larger 'memory', and a more accurate one, and the constraint patterns can be mechanically mapped by the computer. Complex data can be better handled by the computer, and its checks applied over a much wider group of people. In the same way critical path scheduling and computer gaming or simulation can digest astonishingly large volumes of specialist data and systematize it for the decision-makers. In short, the new managers have new tools to run their new organizations.

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[12] Argyris, Chris 'How Tomorrow's Executives Will Make Decisions', *Think*, November-December 1967, p.20.

[13] White, Orion F. 'The Dialectical Organization: An Alternative to Bureaucracy'. *Public Administration Review*, January-February 1969, p.32.

[14] Bennis, Warren G. 'Beyond Bureaucracy', p.35. See also Bennis, Warren G. *Changing Organizations*, New York, McGraw-Hill, 1966, p.12.

[15] See, for example, Novick, David 'Long-Range Planning Through Program Budgeting', *Business Horizons*, 12 (1), February 1969, pp.59-65.

We have not space in a paper of this nature to give a satisfying portrait of the 'young' organizations. But we can note that there are some in existence.

EXAMPLES OF THE 'YOUNG' ORGANIZATION

1. A Dialectical Organization—The Wesley Foundation

In an article in *Public Administration Review*, Orion F. White described what he called a 'dialectical organization', one which takes the client as an equal, and which prevents the possibility of the organization's giving up in the face of the frustrations in taking the client's part. As White observes, it is usually possible for the organizational man to use his position, status and organizational expertise (his inside knowledge) as means 'to hold the client in a subordinate position'.[16] Not so the young organization. He goes on to show what such an organization looks like through an archetype organization, a private, church-related social service agency operating in a poverty area of San Antonio, Texas:[17]

> These are the administrative conditions which exist at the Wesley agency. Policy within the agency is fluid and is set, as an agency document notes, by 'several bodies (executive staff, area staff, total programme staff, and total staff) to insure flexibility and some balance of power within the staff.' The two areas of policy not subject to change by the staff are those regarding alcoholic beverages and games of chance. Staff relations are explicitly designed on a principle of 'non-dominance'—i.e., of not allowing individuals to possess or develop truly authoritative positions in the agency. Supervisory or management positions are periodically assigned by total staff decision, and in addition, the agency operates with overlapping administrative roles, so that one person may be over another in one functional area but under him in another area. While there are job descriptions, these are general in nature. No specific constraints except those relating to housekeeping activities (reports, records, etc.) are defined for the various roles. Also, except for such guidance as can be obtained from the agency's social work theory, few criteria for defining duties and effective role performance exist.

2. Litton Industries

One of the most spectacular growth companies in the United States (and now the world) is Litton Industries, whose sales topped $1,000 million after only thirteen years of operation.[18] The president of the company has said:[19]

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[16] White, op. cit., p.39.

[17] ibid.

[18] See Strogoff, A. 'Business Looks at Education', *The Educational Forum*, Vol. XXXI, No. 2, January 1967.

[19] Quoted by Patton, Arch 'The Coming Scramble for Executive Talent', *Harvard Business Review*, May-June 1967, p.168.

> Our company has to have builders, so we've tried to create for this type of executive an environment that you might call a 'free form' approach to management.
>
> As far as possible everybody has a line job. We like our executives to stand exposed to their prospective success or failure individually, rather than as an indistinguishable part of the functionalized crowd . . .
>
> We don't have published organization charts or standing committees for the same reason. We believe that in the growth process the organization structure should not be developed too tightly . . . The biggest volume of creative activity in our company would probably take place in the white space between the boxes on the organization chart—if we had one.

Other companies, proving by their success the efficacy of the non-bureaucratic organization, have practised in their road to success the non-hierarchical, temporary systems approach. In such an organization, the manager is a temporary boss, that is, he is leader of the team when the organization is tackling a problem for which his skills give him the right to lead and direct. In another situation and to confront another problem, the former team leader could be a team member, or even not in the team at all. I recall being told by an executive of Polaroid of a standing joke in his particular organization. A young executive, on leaving the office, instructed his secretary: 'I'm going out to lunch. If the boss calls, make sure you get his name'.

3. R and D Organizations

The prototype quoted for the modern organization is the research and development organizations now springing up in the tertiary and quaternary industries. These simply could not function bureaucratically. They are loosely structured bands of experts, who assemble themselves into operational units about a particular research assignment or contract. Once the management has allocated a team leader for the assignment, members may volunteer to join the temporary outfit, to play a major or minor part in the exercise, to programme their working hours in or out of the 'office' to suit the needs of their concurrent membership in several such task forces and so on. The administrative structures, in short, are geared to fit the men involved: the men are not required to fit Procrustean bed structures.

4. The Matrix Organization

The matrix organization here described by Chris Argyris,[20] another of the patron saints of the new anti-bureaucratic organizations, closely resembles the kind of model advocated by Warren Bennis:

> A matrix organization is designed less around power and more around who has the relevant information. A project team is created

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[20] Argyris, op. cit. p.22.

> to solve a particular problem. It is composed of people representing all the relevant managerial functions (e.g., marketing, manufacturing, engineering, and finance). Each member is given equal responsibility and power to solve the problem. The members are expected to work as a cohesive unit. Once the problem is solved, the team is given a new assignment or disbanded. If the problem is a recurring one, the team remains active. In many cases . . . the project manager is given full authority and responsibility for the completion of the project, including rewarding and penalizing team members. An organization may have many teams.

In short, I am suggesting not only that such young organizations could exist, but that they do exist. And where they do, they serve to demonstrate how great is the generation gap between organizations born in different eras.

CONCLUSION: THE NATURE OF THE GENERATION GAP

The generation gap, we must remember, is not caused by the fact that one person has a 'good' set of values and the other has a 'bad' set. The older person clings to his value set simply because it *has* been efficacious in the past. It has made him what he is. The question is not whether it has served him well in the past, but whether it is good enough to serve him through the present into the future. And that is the essential question being asked now about bureaucracies.

And it is these kinds of organizations which are chiefly under assault at the present in the same fashion in which the older generation is under fire at the hands of the younger generation. The main criticism of these old organizations is that they are now dinosaurian—ponderous, large, and slow; they are huge, lumbering organisms too cumbersome for a period in time when speed, adaptability, expediency, and creativity are the ecological virtues of the healthy organization.[21]

Nor will mere revisionism do, for the generation gap has been created by *radical* change. In the normal sense of the term 'generation gap', the radical differences are shown in the 'permissive society' where the seemingly age-old conventions relating to sex, courtship, marriage, and customs concerning the place of women and law and order are being thrown out. In the organizational sense, then, the generation gap is seen in the wholesale debunking of bureaucracy as a viable organizational form. There are many in 'old' organizations who can neither comprehend nor conceive how the organizational world could be any different. But the new age has a very different frame of reference, and none of the familiar landmarks are sure guides any more.

So there appears now to be developing a very clear split between the organizational generations as great as that between the R.S.L. and the Moratorium marchers. The older organizations—and the men in them, by and large—are wedded by experience to the bureaucratic model, in one shape or another. The new generation cannot see the need for the old bureaucratic certainties, and are wedded to the idea that a swinging, adaptive organization which is to be truly a child of the modern times must reject most of the concepts which are derived from the bureaucratic model.

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[21] See Jones, John Paul 'Changing Patterns of Leadership', *Personnel*, January-February 1967, pp.9-15.

This paper does not attempt to prove the unprovable. I am not trying to argue that the younger generation is completely right and that the older generation is completely wrong. As always, then, it seems that we may have to settle for compromise.[22] It seems likely that the old forms will remain to do what they did so well—the maintenance of routine and standard on-going functions. But where innovation, development, and creative drive are needed—and these will be increasingly needed as all business and service concerns find themselves being affected by the trend to internationalism—then one of the new organizational models will have to be employed. Furthermore, we may find increasingly that the model of organization employed for routine and maintenance operations (predominantly the clerical and typing functions) will be different from those used by the professional and technical persons in the organization. So we will find firms not with one modified structure, but with two or three separate structures, all necessary to maintain the health of the organization caught in the maelstrom of the late twentieth century. And that kind of situation may introduce within any one organization dimensions to generation gaps which we have at present not even dreamt about!

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[22] Argyris gives assent to this view, op. cit. p.22.

EDUCATION FOR ADMINISTRATION IS NOT ENOUGH

K. R. LAMACRAFT, B.A., M.ED., DIP. ART, T.P.T.C., A.F.A.I.M., M.A.C.E.

Consultant

INTRODUCTION

Education is the largest business enterprise of each state government and absorbs a significant proportion of federal funds.[1, 2] It can be classified as a labour-intensive service industry.

When the concept of education as a business enterprise is accepted, it is logical to apply to it the kind of critical examination which we expect private industry to apply to itself. As shareholders in the enterprise, supplying the development and operating funds, we should quite rightly ask, 'How efficient is this business which absorbs so much of our resources?' And 'Are the managers adequately prepared for their jobs?'[3]

As a matter of prime importance, the concept of the *administration of systems of education* rather than the *management or organizations whose objectives are to provide education as a service to the community* is challenged.

MANAGEMENT VERSUS ADMINISTRATION

In modern business theory, the principle of the need to involve the employees in the management decision-making process is well-established.[4] In most successful organizations, a major effort is maintained to help the individual employee to identify with the organization to which he belongs.[5]

There are four fundamental requirements for this process.[6] The first is the freedom to communicate and a well-organized system to facilitate communication. The second is a method of determining the objectives of the organization which, at the same time, commits the individual to the achievement of those objectives. The third is the granting of responsibility, with the necessary freedom and authority to the individual to plan and to do his part to achieve the objectives. And the fourth is the provision of the resources . . . including training, specific services, plant, equipment, and money . . . to do the job.

If the objectives of the organization are decided without intense intercommunication between those in leadership positions and those who put the decisions into effect, the latter will be only partially committed to the decisions. The employees then see their role as that of obeying orders. Another real danger is that each staff member will not fully understand the objectives of his task, in which case his work will inevitably lack effectiveness.

If the organization strives to govern every action of the individual by rules and directives, the employee . . . no matter what his place in the hierarchy . . . will be an administrator or supervisor and *not* a manager. This view agrees with that of Yuill[7] who points out that:

> 'Many education administrators are little more than supervisors . . . they are not responsible for the full range of decisions which affect the total entity in which they work.'

No business can be efficient if it does not strive to use to the maximum the intelligence, knowledge, and skill of its staff. Large business organizations are making increasing effort to identify, to train, and to motivate this potential. The most effective motivation comes when the employee sees the aims of the organization as his own aims. But he then requires the freedom to use his intellect, total knowledge, and personality towards the attainment of those aims. With this, he becomes a manager and not just an administrator.

THE CONCEPTS OF MANAGEMENT

R. K. Browne[8] recently wrote of the need for a systems study of theories of administration which are applicable to educational organizations. It is felt that sufficient is known already for very significant improvements in management in education, although the need for such research is acknowledged.

It will be noted that the concept of management applied in this paper is similar to that defined by Newman and Summer,[9] in that it is regarded largely as a social process. Management is the process whereby a person influences, motivates, and co-ordinates the activities of others toward defined objectives.

The requirement in management is the study and manipulation of a dynamic social situation towards the realization of objectives which, themselves, are changing as a part of that environment.

The fundamental problem facing Australian education systems is the need to identify what should be the immediate and the longer-term objectives of the education process, and to express them explicitly and clearly.

Already the idea may have arisen that emphasis is being placed on 'management by objectives'. A more accurate description of the emphasis intended is given by E. C. Schleh[11] as 'management by results'. The difference in the terms is as highly significant as the difference between the thought and the deed.

In such a modern concept, it is necessary to challenge some of the ideas of the past and to employ the most recently-developed relevant techniques to improve the management process.

Thus, there must be a strong drive to give managers in education systems the knowledge and training to make the best possible use of those techniques. Beyond that, there must be an enormous expansion of co-ordinated research into problems and techniques relevant to educational management.

One interesting development was described by S. Tanaka.[10] He termed it 'participative management' and described how organizations can and should provide the social environment for *self-realization.*

Centralization, which typifies the Australian educational systems, combined with rapid growth, tends strongly to develop a complex of small interacting jobs. Persons in such jobs are forced to shape their personalities to perform a series of closely-defined almost-routine tasks. This is true in industry, but even more apparent in governmental organizations.

The psychological needs of the individual have, in recent years, risen beyond the demands of sheer existence. People increasingly expect that their work will add purpose and fulfilment to their lives.

In education, we have a workforce which is of above-average intelligence; the employee is also made deeply conscious of the growing dissatisfaction of its clients with its products and their presentation. For these reasons, if for no others, there must be a deep reappraisal of every aspect of the organizations controlling education.

Having emphasized repeatedly that management must be concerned with the totality of the situation, it is now appropriate to consider some of the modern management techniques used by progressive organizations.

All private business or public companies are not progressive. Nor have all educationists and public servants shut their minds to the changing philosophies of management. However, it is fair to say that public service organizations are more stereotyped, sterile, and inward looking than the majority of private enterprises.

It is interesting that Henri Fayol, and his son,[10] have both underlined the inherent management problems of government operations.

OBJECTIVES, ORGANIZATION, PRODUCTS, COSTS

Australian education has repeatedly been criticized for its reluctance to experiment. [12, 13] Nevertheless, there are many enthusiastic, highly-intelligent, dedicated members of the teaching profession. However, the climate for experimentation is not good. The community is concerned about examination results and 'free' education. It accepts the traditional centralized state systems and cannot conceive objectives much different from the traditional objectives, which are not fully appropriate to meet our rapidly-changing environment.

Objectives

Until the community accepts new and precise and dynamic objectives for education, education is not going to change much. However, people are going to say education is not being effective and its products are unsatisfactory—even if they cannot say in what way or why. They expect educationists to give a lead.

Unfortunately, the great majority of educationists are almost overwhelmed by the outmoded business methods, inward-looking promotion systems, and the politics of public service control. Somehow this has to be changed. Educationists must give effective leadership by reconsidering the immediate and long-term aims of our education systems and by the concise and clear statement of them. These must be so planted in the minds of the public that they become the ideas of the majority of individual members. Then the changes will occur.

In the process of managing change,[14] the ideal has to be conceived. Then the present situation has to be analyzed and the logical and *opportunistic*[15] steps from the present to the ideal situation becomes the art of the possible—the development, within those involved, of the desire for a change to be made.

The Australian College of Education has made significant moves towards constructive criticism and discussion of all matters of education. Perhaps the time is now right for planning more radical moves to involve more parents, more non-professional people, and the young people of the community.

Although the community looks to educationists to give a lead, the community will have its own values. The immediate objectives must take into account those values and change with them. The experts must work to influence the values, progress towards the ideal will then take care of itself.

The objectives of education must simultaneously satisfy the parents, the students, the employer, and the community generally . . . this must be recognized by those charged with the responsibilities of the education process.

Every person serving an education organization must understand how his job contributes to the achievement of the objectives. More than that, he must organize his own efforts to ensure that he makes his full contribution.

If this type of operation is to be achieved, structural changes must occur in the organization of education.

Organizational Structure

Australian education is typically a series of centralized systems. This has arisen from historical and traditional bases. We need to move away from this pattern.

It might be relevant to note here Fayol's view[10] that 'Competition is the principle of organization which leads most surely to proper management'. One is not likely to get much competition from within a highly-centralized, public service dominated system.

Perhaps the large centralized, hierarchical systems could be divided into units, each 'one entity in a maze of interconnected entities',[16] somewhat on the basis of the interlocking Japanese business system, although this is based on a different culture.

This change would not be so new or radical. Sir Charles Renold[17] suggested it back in 1948. He saw the management problems of large organizations as best solved by separating each into a number of internally complete and operative units, striving independently and co-operatively towards a common goal. Certainly a move of this type would facilitate interaction with some of the small private education enterprises which have shown, proportionally, much more energy and trail-breaking tendencies than the large ones.

Structure and organization must be such that the old idea of 'individual accountability'[9] is replaced by a multiple credit system; in which each person who has worked towards an achieved goal receives credit for its achievement. This is particularly important in education, in which many of the aims can only be achieved by multiple or group action.

Each manager, at whatever level, must accept that he can only achieve his objectives through those he manages achieving their own.

It is well known that there is in-built conflict of interest in organizations. In education, as an example, we have the conflict between the individual's demands for free choice in tertiary education and the fact that the community may require the educational resources to be used in some areas more than others. The objectives should resolve such dilemmas.

The executive manager will certainly still have to ease friction due to personality differences in those working with him.

Products

A very good exercise for an educationist is for him to list the services or products he offers to the community. An examination of these will be an examination of the output contributing to the achievement of the objectives.

In business, any such study by an organization is made against the facts of the objectives of the organization and of consumer acceptance.[18] The main questions asked are:

What are our short-term and long-term objectives?

What products are we providing?

At what markets are they directed?

Do they satisfy the consumer? If not, why not?

What is the total cost of making and supplying the product to the consumer?

What profit or other returns result to the organization?

What is the pattern of costs and profits for various levels of sales?

What is the volume of optimum return?

Are changes in product, in presentation, or in consumer attitudes desirable? Are changes feasible?

Would changes x, y, z be economically sound?

What markets are still available?

What are our competitors doing?

What research is proceeding and where is it likely to lead?

What are our own development needs?

What is the cost and cost-justification for needed developmental research?

What are our strategies in the present situation?

What should our strategies be in the event of p, q or r occurring suddenly?

Typical associated questions are:

What are our personnel plans?

What is the state of morale in the organization?

What is the industrial relations attitude? How can it be improved?

What assets do we have and how effectively are they used? How are our assets protected?

What is the expected cash-flow position and will this enable us to continue along the planned programme?

As you can see, it is a formidable list. Can and do we, in education, look at our situation in this objective way? As a simplified exercise, let us write down some of the established service areas for education enterprises:

Pre school
Infant school
Primary school
Secondary school (compulsory)
Secondary school (continuation)
Schools for the disabled, slow learners, etc.
Vocational education
Tertiary education

Preparation for adulthood
Establishment of sets of values
Preparation for citizenship
Preparation for family life
Preparation for earning a living
Education in the use of leisure
Education to broaden outlook and understanding

Other aspects were listed by Kemp[10] in 1967, in relation to progressive education in the U.S.A.

Evaluation

Now let us follow this up with a recognition of the problems of assessing, firstly, levels of organizational achievement in the areas listed and, secondly, the even more difficult question of cost-effectiveness.

We can accept that there is a demand for more pre schools. This may not be based on educational reasons at all. Also, in general, children seem to enjoy primary schooling more than in the past, so there is some customer satisfaction in that area.

However, there are disturbing indications that the 'customers' are not satisfied with secondary education. Part of this dissatisfaction arises from a desire by some students to be finished with schooling, yet compelled to attend school. Obviously, either the product being offered must be changed, or the attitude changed. Otherwise the corporate image of education will, for these people, always be a bad one. The services offered will be shunned for emotional reasons.

It may not be appropriate to change the product to suit the 'resisters'. We might ask, 'Has the community been oversold on the need for all teenagers to continue at school full time?' Perhaps a break from school would provide a chance for salutary contact with the realities of life to motivate them to further study.

This might lead to the equivalent of customer research, test marketing, and product development.

It would seem that it would be valuable to involve young people who have left school before reaching their potential level, and who now feel the need to continue their studies, in programmes of product development. It is likely that we have too long regarded the parents and the future employers as the customers who have to be satisfied. Those undergoing training and education are clients, too, even if they are also 'raw material' to be shaped!

Opinions of this type arise from and are reinforced by long experience with vocational, leisure time, and adult education. In these areas, success in meeting the needs of the clients can be measured to a considerable extent by the continuity of attendance of the students.

Cost-Effectiveness

Repeatedly, we hear questions on the *costs* of implementing changes, whereas we should be more concerned with the *cost-effectiveness*. The ways the costs of education in Australia are met do not seem to be clear to most citizens—'The government will pay!' In some other countries, the costs of education are obvious and borne as a special levy on the community. Unfortunately, the result of this is that the areas most needing good education cannot afford it.

When one considers cost-effectiveness, many areas—staffing, teaching methods, teaching aids, class sizes, and so on—should be studied.

Whilst agreeing with Dr. Walker's views[13] on the difficulties of measuring educational efficiency, one can easily see where increasing cost-effectiveness is possible.

One matter is in legal requirements, such as compulsory attendance at school to a given age. If such laws are defective and the reasons for them are no longer present, the laws should be changed. The resources so freed would enable more effective service to be given in other areas, without increase in overall costs.

Cost-effectiveness is highly relevant in the controversy about aid to non-government schools. From a business point of view, if the allocation of $10,000 to another organization will achieve more of the objectives of education than $10,000 spent by a government organization, the allocation should proceed. This has been going on for years in New Guinea! This does not mean that the allocation is a gift without conditions or some form of accounting.

Supporters of extension of expenditure on education need to devise valid ways of establishing tangible advantages—to the community, and not merely to the individual.

A way to persuade parents and children to value education more highly and to use its limited resources more earnestly would be to require a contribution or fee to be paid to cover at least part of the cost, as is done in most post-secondary education.

UTILIZATION OF ASSETS: PLANNING AND CONTROL

Time and time again, one hears criticism of the long periods when educational establishments are not in use. In the same way, reports are frequently heard of the inadequate provision of accommodation for children required by law to attend school. These two kinds of comments are paradoxical.

Utilization of Assets

Assets, such as land, buildings, and equipment, must be regarded as having, besides their initial cost, inherent continuing costs.

The first matter is that the purchase of that particular asset has prevented the use of the money for another purpose, whether it be the building of roads, an increase in the old age pension, or foreign aid. We should choose that course of action which will give us the best return on the investment.[20] This is obviously a difficult matter to decide. It is easy to see that the investment of the money would bring in an income, which is foregone when the asset is purchased. What is the value of education foregone?

Assets do not keep their value. They deteriorate or they just become outdated. Depreciation is an attempt to spread the cost of the item over its useful life.[21] Perhaps it is more realistic to think in terms of replacement cost,[22] in which case we are providing as well for the changing value of money.

Add to these concepts the cost of normal maintenance to ensure the optimum life of the asset, and it will be understood that buildings and equipment are costing money even when they are not in use. For this reason, such assets should be in gainful use for as high a proportion of the time as possible.

The typical present use of education buildings will approximate to 1815 hours per year. The possible use might be about 5175 hours per year.

$$\text{Utilization} = \frac{1815}{5175} \times 100$$

Say, 35 per cent.

Is this good enough?

If schools were to operate two shifts per day, the utilization rate would climb to about 66 per cent. This would, in effect, double school accommodation at no extra cost in capital charges or increase in land areas.

Looking at the situation in another way, and a way more acceptable to many people, if we used the schools fifty-two weeks of the year instead of only about forty-two, and made no other changes in usage, we would raise the utilization rate by about 20 per cent to 44 per cent.

Planning and Controls

The International Conference on Educational Planning, held in Paris in 1968, gave emphasis to a need for a parallel development in planning the objectives and nature of education and in the demands for physical facilities and their types.[23]

Building

The probable demands for educational facilities can be quite accurately predicted at least two years in advance at most locations, and perhaps five years ahead on a state-wide basis. Yet we have in Australia a long history of not having facilities ready when they are required and of using 'temporary' classrooms for a decade or more.

Much of the confusion over building programmes arises from the limits of available funds and competing demands for them. The situation is made worse by the already-noted reluctance to break with tradition in the usage of assets. The ultimate problems are the poor planning and controls applied to building projects, and over-optimistic time-targets being given.

Private industry applies Critical Path Analysis[20] to buildings and many other types of projects, with Programme Evaluation and Review Techniques (PERT) to give more reliable time scheduling. The use of bonus and penalty clauses helps to keep contractors to their agreed timetables. If these methods are in general use in education projects, they are not being used effectively.

Planning Change in the System

Major changes can be implemented quickly in a centralized organization, as A. W. Jones[24] has pointed out.

New South Wales had one recent major example of implementing change when the 'Wyndham Scheme' was introduced. A well-considered scheme for a change in educational pattern was evolved. However, the scheme was implemented without time for appropriate planning and the preparation of staff and facilities. The results were predictable in that the full intentions and benefits of the scheme have not been achieved.

Equipment

In business, the question of cost-justification is always a matter of concern. In the public service, it is cost-accountability which prevails—and you must spend all your budget somehow, or it will be reduced next year!

PERSONNEL MANAGEMENT

Personnel management is confined, in this presentation, to matters relating to staff and the use of staff.

Management of staff is influenced by the organization structure in which it operates. In education, one must question the continuance of the multiple roles of the inspector. The role of assessor for promotion is very much a farce, in that it cannot be sustained that an inspector in a brief visit can assess performance of a teacher or compare his performance with others with similar claims for promotion.[26] That he has this role inhibits him in his role of professional adviser.

The need for the evaluation of teachers is a real one, both in justice to the individual teachers and in the interests of the organization. In industry, the assessment of performance of subordinates is very much in the hands of their immediate superiors, who know their work intimately. The process of assessment of performance is being increasingly organized and monitored by a neutral personnel-section officer. The ideal seems to be the measurement of results achieved against previously-agreed targets, followed by a constructive dialogue between the superior and the subordinate, recognizing that the attainment, or the reasons for non-attainment, of the targets are of mutual concern.

Staff Planning

The demand for staff is just as readily predicted as the demand for buildings and equipment. However, the lead time in preparation may need to be greater to allow for the training period, if tradition and industrial pressures are to be met.

Selection and Training

There is an idea current in the community that anyone who passes an examination at matriculation level should automatically be able to proceed to a self-chosen university education. In the same way, and just as vehemently, it is held that any young person who obtains the minimum educational requirements to enter a teachers' college should be able to do so—and be paid for it. The implication is that any such person can, by attending a teachers' college, become a satisfactory teacher.

This is an unacceptable assumption. It is sad to find this attitude in the community, as it reflects the opinion of the teaching 'profession'.

It is most unfortunate and unbusinesslike to select persons for teaching almost entirely on their academic results in an examination. Although the reports from headmasters are reputed to be considered, the relevance and bases of these reports are suspect.

What is perhaps even more distressing is that persons accepted for teacher training, and then proved during training to be unsuitable in temperament or personality, are frequently 'processed' and pushed out into the schools. Industry has learnt that the cost of employing an unsuitable person is much higher than the loss of the costs of training up to that time.

The gradual trend towards long academic courses for teachers in training might well be unwarranted, unless more realistically related with teaching experience.

To some extent the long courses result from the tendency of educational systems to concentrate almost entirely on the teen-age entrant to the teaching service. Experience has shown that mature-age entrants to teaching bring with them dedication and maturity.[28] They have proved very satisfactory and effective staff members. Of course, a careful screening process is essential.

It should be made more easy for these people to become teachers. The Technical Education Department in New South Wales has had considerable experience in day-release in-service courses, but it is most desirable that part of the training should be pre-service.

Part-time evening pre-teaching courses could also be arranged to facilitate the movement of adults from other occupations into teaching. This would parallel the provisions for people to make career changes to engineering, accountancy, and other occupations.

Large businesses have continuing programmes of training and retraining. In education, retraining is very important—so important that attendance cannot be made entirely voluntary.

Tertiary Education

Lecturers going into tertiary institutions do not have to show any training or aptitude in developing the learning process for their students. How can this be justified?

The teaching performance of people in tertiary institutions seems to show no correlation with their subsequent career success. How can this be explained?

From a management-survey point of view, the acknowledged fallout after one year at a university is significant of gross inefficiency in one or several areas. It is possible that, next to the greater utilization of assets, this represents the greatest misuse of funds allotted to education, and a heavy loss to the individuals and to the community.

Termination

Poor or lazy teachers have a serious effect on the morale and effectiveness of their colleagues. The resistances they build up in their pupils are transferred to the pupils' other lessons and upset the work of other students and other teachers. In a non-governmental organization, termination of the services of a poor employee is relatively easy, but it is not so in a public service organization!

Before taking the drastic action of termination, industry usually tries to provide means whereby the person is given more training, transferred to more suitable duties, or better motivated, so that he becomes a more effective employee.

Promotion

The filling of a management position in an organization should be essentially on the basis of the ability of the person to meet the requirements of the new position. In industry, these requirements are usually set down in some detail and include both studies and experience in management as well as in the relevant technical areas.

Outside applicants are frequently sought, even when persons within the organization may have the requisite qualifications. An internal applicant then has to measure up to the standards of the external applicants. One could say that the promotion ladder is an open one, not one up a tube which shuts out external contenders.

The implications for education organizations are that management studies *should* be required before applicants are accepted for management positions. Also, if the best management is to be obtained, those within the organization should have to measure up to the standards of qualifications and performance available from outside the organization.

Once the principle is accepted that relevant training is required for promotion to specific management positions, the provision of this training becomes a matter for urgent mutual interest of the leaders of the organization and of the employees.

Of course, this principle negates the naive idea that pre-career training should be all that is needed for promotion to the highest levels of the organization. This idea becomes more ludicrous year by year, with the changes in modern technology, knowledge, and environment.

Induction and the Use of Staff

Most firms have well-defined induction procedures for new staff, so that the staff will become effective in the new environment quickly.

Because teacher training is done almost entirely by the employing authority, induction to the employing organization in its macro aspects is most comprehensive. However, induction to the job and to the school is very often perfunctory. This is one outcome of the lack of training of the manager/headmaster responsible for the induction.

The need for teachers in the various subject categories can be estimated some years in advance with considerable accuracy. Why, then, do we have a shortage of teachers in some categories and not in others? It may be poor planning or it may be unexpected loss of people with qualifications in certain areas. If the latter is the case, the financial recognition of these skills by the employing authority must be raised to meet the competition.

Salary Administration

Salaries, fringe benefits, and conditions of service have to be competitive with industry if the teaching profession is to attract and to retain people of the desired ability and quality.

Salary administration must not only provide an appropriate and competitive salary for a job[29] but must recognize that different people in the job will show differences in levels of personal performance. Thus, it must also provide for proper recognition of differences in performance.

In industry, at present, the problems of defining performance targets and measuring levels of performance are receiving considerable attention. The public service has long been reluctant to face such problems, preferring to give an annual increment except for most unusual gross cases of incompetence. It has thus gained a reputation for rewarding mediocrity. If the teaching service is to retain its most able and dynamic staff, it will have to match industry in this area, too.

Industrial Relations

The relations between the teaching profession's industrial organizations and those in government who employ the teachers on behalf of the community are generally very poor at present.

There seem to be three special causes. The first is that the administrators are not trained as managers and are not free to act.[13] (One thinks of the large Handbook[30] given to each N.S.W. Government teacher.) They have little feeling for personnel management, are largely oriented to an environment of children, and are generally expert in little except classroom teaching. The second is the constant disruption, by transfers, of dynamic groups forming in the school staffs, and of the relationships building up between staff, parents, and the community. The third is the one which affects all public service industrial relations. It is rigidity which is engendered by the tight authoritarian system and the political problems which intervene when one party represents the government in power.

A way of breaking out of this situation—and at the same time making possible more vital and close relationships between the community and the members of the education system for the area, more flexibility to meet the needs of that community, more cohesive action by the teachers—would be to set up a commission for education, conducting a service business and required to give supportive action to local, semi-autonomous education systems.

Individual Problems

Teachers have individual problems of the same kind and about as often as other employees. Industrial personnel officers find a considerable proportion of their time is taken up in helping to solve these personal problems. The organization has to be flexible and to show consideration to its employees if it is to retain their regard. Provision for this specialized service is required in educational organizations.

COMMUNICATION AND PUBLIC RELATIONS

Education is the transmission of the mores, customs, and knowledge of the community to its new members, as well as the development of the individual to the maximum realization of his potential. It is, then, part of the culture as well as a major activity in the preservation of the culture and in the evolutionary change of the culture.

Under these conditions, the essentials are:

The establishment of what values, etc., should be transmitted;

The recognition of trends in changes;

The co-ordination of the agencies in the education process; and

The organization of the maximum return for the money and effort expended.

Communication is the key. Education has to be the concern of the community; the community has to be the forum of study for education. Hughes[19] and many others have underlined the dangers of not involving the community in the discussion of all aspects of education.

It is recognized that in many businesses, particularly in service industries, good public relations are essential to the prosperity of the business. Expenditure of money for this item of the budget can never be accounted for by tangible and fully identifiable gains. In that, it resembles allocations to education.

A good public image will attract more staff, and staff of a higher calibre. Change is facilitated, because it is more readily accepted as being desirable.

Thus, public relations are the concern of every member of the organization, with the responsibility heaviest at the top levels of management.

It is becoming more widely recognized in business that a specialist is required to assist and to organize members of management to consider the views the public is likely to take of their words, actions, and timing. Too often, Australian businessmen still, like public service management, act with extraordinary disregard for the psychological impact of what they say and do.

Managers in education, too, have to be trained to think in terms of their objectives, and to consider how care in choosing words or illustrations, the preparation of their strategy, and the aptness of the timing, will help them to achieve those objectives.

THE OUTCOME

Some people are very good teachers and never want to become managers. Some people are very good teachers and would like to become managers; however, they may or may not turn out to be good managers. Other teachers feel that their strength is in management, not teaching.

Educational management as a career should require special training, some teaching experience, and a career progression parallel with that of a classroom teacher or lecturer.

This leads to the core of the situation. If education is to be an effective service, it must be managed rather than administered, and authority and responsibility must reside properly at each level of management.

When this is so, management in education *will* become a career and management responsibility will go to those who have the appropriate ability, interest, training, and progressive experience.

This will certainly contrast with the present policies. It will also require the reward of excellence in teaching to be continued in a teaching situation.

ACKNOWLEDGEMENTS

It is not claimed that this survey breaks much new ground, except in advocating that the whole spectrum of commercial management principles should be applied to education as a service industry.

Some Australian universities and other tertiary institutions have made notable contributions to the development of educational managers by providing courses at various levels. In many cases these are termed courses in educational administration. This is partly because they are designed to serve the present situation, and partly due to a different use of the term 'administration'.

SUMMARY AND CONCLUSIONS

The paper advocates the development of management in education, rather than administration of education. In the survey presented, it is held that the Australian pattern of education organization neglects much of what has been learned in the last fifty years about the management of enterprises. It is defective in the use of its assets, lacks the will to cut the areas of low return on effort, is inefficient in communication, often heedless of public relations factors, weak in planning, lax in control of projects, and very slow to use modern techniques properly to improve services and management.

Since the decision making is highly centralized, and administrators have been what the central decision makers wanted, it would have been logical to expect that administrators would have been selected for administrative potential and trained appropriately. This is not what has happened.

Thus, the way is free to set up training in the management of education. It would also be necessary that the organization of education be restructured so that management is possible! This would carry with it the reconsideration, by all sections of the community, both of the objectives of education and of the deficiencies of the present system of government-dominated and centralized systems of control.

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PLANNING FOR EFFECTIVE EDUCATION— FINAL REVIEW

D. A. JECKS, M.A., B.A., DIP.ED., M.A.C.E.
Senior Lecturer, University of Sydney

A paper read at the Twelfth Annual Conference of the Australian College of Education, Perth, 20th May 1971.

INTRODUCTION

In their General Introduction to the 1967 *World Year Book of Education*, Blaug and Lauwerys state that 'It is fitting and proper to run education systems as efficiently and economically as possible'. I suppose that very few would disagree with the essence of this statement.

In any enterprise the effective use of resources is a first consideration. Indeed, one of the preliminary papers I received regarding this conference stressed the 'importance of good planning (related to resources) and good administration (of resources) for effective education', and foreshadowed the 1972 conference theme as Educational Priorities in Australia. The combination of the 1972 theme with that of this conference shows how the college is attempting to highlight priorities and planning in Australian education. Add to this the UNESCO Conference on Educational Planning, which was held in Canberra in September 1968, and Professor Bassett's subsequent publication *Planning in Australian Education*, plus the Australia-wide Commonwealth Needs Survey, of which the New South Wales contribution is currently being completed, and the importance of this general area is stressed even more strongly.

Planning requires the prior clarification and setting of priorities and objectives. These must include considerations of quality as well as those of quantity. While the provision of teachers and physical facilities for rapidly expanding student enrolments indicates a commendable administrative effort, Mr. Fitzgerald has pointed out that qualitative factors are also at stake. He noted that 'sound planning requires us to re-examine the aims, methods and outcomes of the whole educational enterprise'. Coombs has described the more leisurely pace of educational change prior to 1940, when relatively simple forms of planning sufficed. At that time, 'a planning horizon reaching only to the next budget year was sufficient'. He has contrasted this with the present situation and claimed that comprehensive long-term planning is essential. Coombs also noted the point taken up by Mr. Fitzgerald, with which I agree wholeheartedly.

> Most important of all is the lesson that educational planning of the new variety must be concerned not simply with expanding the old education system but also with changing it.

Planning in Australian education has related mainly to the maintenance and servicing of the existing system. Dr. Radford observed that 'Any form of social organization including education must rejuvenate itself, be regenerated or change with each new generation'. Mr. Fitzgerald noted that 'if to "plan" is literally to devise a new scheme of things, we have had little use for it in Australia'.

I believe that in general the state departments have planned efficiently at the system level. Forecasts regarding enrolments, teacher supply, sites and buildings have been made with a fair degree of accuracy, and plans to meet these needs designed. Acceptance of these plans, and the question of what share of state and federal resources is to be devoted to education, have been matters for political decision. Within the system of annual budgets the main focus has been on the short term. In Australia there has been no political acceptance of either economic or educational planning other than as these relate to current situations.

It would be unfortunate if we adopted a defensive position and responded only to changes which were forced on us. Miss Whitlam made this point well, stating that 'too often we have reluctantly caught up with change', and concluded that 'probably we really need a transformation'. Mr. Hayter referred both to 'crisis' and to a 'dynamic changing situation'. However, Mr. Fitzgerald claimed that 'the community has proved loath to believe that any "crisis" loomed in education, observing that the school system seemed "most unlikely to collapse".' Mr. Williams noted that since 1945 the energy of top-level administrators in the state departments 'has had to be turned increasingly outwards to regulate pressures from rapid and critical changes in society'.

What is the import of all this? First, we must accept that decisions regarding the clarification of objectives and priorities in Australian education are an essential base for effective planning. Mr. Fitzgerald has claimed that we lack any real sense of priorities. Second, while the proper concern of front-line administrators has been urgent attention in coping with problems of quantity, the quality of education in the schools and of the system generally is a key issue. Professor Bassett has pointed out that the 'whole planning venture is of little consequence unless it culminates in something worthwhile happening to children'. Third, we need to plan for effective education rather than to respond defensively to particular pressures and crises of the moment. This is not to deny their importance and urgency; indeed, they are a normal part of the day-to-day administrative process. While recognizing this, there remains a very proper concern for effective long-term planning.

EDUCATIONAL PLANNING

The conference theme is 'Planning for Effective Education'. Before the conference I expected that both 'planning' and 'effective education' would be defined in the papers presented. This has not occurred. If the statement of the conference theme was intended primarily as a convenient umbrella I can understand why my expectation was not fulfilled. Certainly, I can understand why those who presented special purpose papers did not feel that it was their role to focus on this definition of terms.

Before proceeding to discuss several matters which I feel emerged during the conference, I shall present several definitions of planning in the hope that these will sharpen our focus on its essential elements.

Dror has defined planning as:

> the process of preparing
> a set of decisions
> for action in the future
> directed at achieving goals
> by optimal means.

Anderson and Bowman have noted the key elements of Dror's definition as:

1. orientation to the future
2. orientation to action
3. concern with deliberate endeavours.

They exclude the element of optimal means from Dror's statement and give their definition of educational planning as:

> the process of preparing
> a set of decisions
> for future action
> pertaining to education.

Mr. Fitzgerald noted that 'The term planning has . . . become one of the new in-words for education'. I agree. Not only is the word topical, it also conveys an important concept. In view of this, it is important that the term planning doesn't become merely a slogan. In their report *Training the Administrator*, which was published in 1963, Dr. Cunningham and Dr. Radford pointed to the danger of the bandwagon effect which could attend the promotion of the study of educational administration. I suggest that the same warning could well apply to the 'new in-word' planning. The concept doesn't need any hard sell. Rather, the primary focus should be on its place in the administrative process and in education generally. Planning has relevance at all levels and should be seen in this perspective.

Blaug and Lauwerys have stated that 'Some educationists and administrators have . . . . displayed some weariness, even boredom, with the notion of planning'. This viewpoint is quite as regrettable as any overly enthusiastic hard sell. It seems to me that critics of educational planning who base their attack on its relationship to economic planning generally, and to manpower planning in particular, lack some balance. Miner has stated the need for a middle ground thus.

> Granted the necessity of consistency and the establishment of priorities, proper assessment of education requires modification and sometimes abandonment of traditional methods of evaluation and target setting. Too much of contemporary target setting has tried to force educational planning into the mould of planning by fixed-coefficient-production-function methods. On the other hand, far too many national education programmes have abjured entirely the techniques

> of economic planning, and employ targets set without regard to overall resource consistency, to internal resource or programme consistency, or to the establishment of priorities within education. There is an urgent need for a middle ground between economic and educational planning.

In Australia, Professor Bassett has stressed the need for decisions regarding allocation priorities in view of the fact that resources are not unlimited.

The point of view that planning is an important element of the administrative process is well expressed in the *Report of the Fifth Commonwealth Education Conference* which was held in Canberra in February 1971. The delegates considered that planning should not be regarded as separate from the administrative process. They felt that planning should be regarded as one of the administrative skills and not as a separate function and stressed the need to integrate planning within the administrative context.

Planning occurs continuously in administration. Its purpose is the preparation of a set of decisions for future action. Without these decisions the functioning of the organization is impaired and may be seriously disrupted. A lack of planning can indicate a lack of future perspective. Planning in the context of organizational behaviour has been widely discussed by writers in the general field of administration, management and organizational theory for the last fifty years at least. Certainly, it is no new concept.

The focus on educational planning which has developed in recent years has related to the needs of the developing countries. It has been observed that the developed countries, such as the United States which exhibits little evidence of macro-planning in its own education system, are ready to give expert advice as it affects the developing countries. Any slight taint of cynicism in this observation is regrettable. The developed countries have most engaged in planning in times of crisis. In view of the problems of the developing countries, it is fortunate that the developed countries have been prepared to contribute the expertise of their personnel to help with the problems concerned.

OBJECTIVES

Professor Bassett has observed that 'Planning in education is a deliberate process of bringing means and ends into effective relationship'. Planning is as much the concern of the teacher at the operational level of the classroom as it is of senior administrators at the system and managerial levels, even though obviously the type and content of planning will be different. He has noted that 'If education is to be clearly directed, educational objectives need to be stated explicitly' at societal, system, school and classroom levels. Discussing planning in its broadest sense he summed up thus:

> At present most stress is laid on the assessment of instructional objectives. There is an obvious need to give more attention to the assessing of administrative and societal objectives, and to effect a proper balance between the three, as a good plan is expected to give due weight to all three types of objectives and to form them into a coherent pattern.

During the 1969 World Education Fellowship lecture series which were held in Australia, Professor Miller discussed educational objectives for the coming decade. He argued the need for 'agreed-upon long-range goals as reference points' and urged the clarification of 'realistic, meaningful objectives'. He concluded that 'Appropriate broad objectives for Australian education would assuredly be of real assistance in planning'.

Recently Professor Miller directed my attention to *Alice's Adventures in Wonderland* to illustrate a point he was making. In the following conversation Alice is speaking with the Cheshire Cat.

> Alice . . . went on. 'Would you tell me, please, which way I ought to go from here?'
>
> 'That depends a good deal on where you want to get to,' said the Cat.
>
> 'I don't much care where —,' said Alice.
>
> 'Then it doesn't matter which way you go,' said the Cat.
>
> '—so long as I get *somewhere*', Alice added as an explanation.
>
> 'Oh, you're sure to do that,' said the Cat, 'if only you walk long enough.'

The question: 'To what end?' is basic. Clarification of objectives is necessary if planning is to have direction. In this regard it was encouraging to note the discussion of objectives in various papers presented. Mr. Brassil referred to attempts being made in Melbourne, related to Catholic education, to define problems and to clarify needs and objectives. Miss Whitlam, in discussing the private schools, claimed that 'The main advantage we have in teacher training is that we have an underlying philosophical conviction regarding the nature, purpose and aims of education'. Mr. Hayter asked four questions which are basic in setting objectives and posed a fifth question which he described as perhaps the 'most important, challenging and frightening of all: What kind of human beings do we plan to produce?' Mr. Williams contributed an interesting discussion of Management by Objectives and summed up that two fundamental concerns were the 'rational pursuit of objectives' and the 'motivation and personal commitment of individuals'. He suggested the value of the application of Management by Objectives to education. Mr. Fitzgerald claimed that the 'General failure to set firm goals and spell out ways of achieving them on a national scale has worked to put our educational services under growing pressures'. He discussed the 'need to clarify some basic philosophical issues' before planning resource allocation and utilization, and concluded that 'the kind of planning for effective education we favour depends very much on our particular concept of that goal'.

Planning must rest on objectives. To say this is to state the obvious; it needs to be said nevertheless. Not to have any plan to reach a destination can mean aimless meandering; remember Alice in Wonderland. It may be relaxing 'just to travel nowhere in particular' but this attitude is indefensible when we consider the needs of Australian education today.

Descriptions of educational practices need to be stated in relation to a rationale and to objectives. If we become obsessed with means, we have no adequate answer to the question: 'To what end?' other than to reply that we are just doing it for the sake of doing it; in this we approach a state of educational hedonism. Means must be closely tied to needs and purposes.

TEACHERS

Teachers have considerable freedom regarding educational programmes and practices in schools. Mr. Williams made this point well. He claimed that supervision should aim to free teachers' 'full latent power'. This requires some shift from past practice. It does not mean that teachers will be free in any absolute sense, for accountability will not disappear. Neither does it mean that co-ordination within the wider organizational system will not occur. Indeed, accountability and co-ordination are necessary components in any organizational setting.

Mr. Williams described the 'tight supervision of teachers' and put the point of view that the relationship of the managerial level to the technical or operational level of the schools should emphasize service rather than control. In spite of practical difficulties of changing supervisory styles and relationships, it is an objective which should be pursued. The interplay of teacher freedom and teacher accountability is a problem area which merits the fullest exploration and discussion.

Mr. Williams noted that as 'the aims of education are achieved through the teacher', the teacher must be the 'principal focus of administrative effort'. If this objective is accepted, it has significant implications for planning at the system and managerial levels.

Supervision of teachers at school level may well centre in helping them to clarify operational objectives and to develop operational plans. A key consideration is teacher perceptions of ends and means. Their aims and their planning are very important. If this objective is accepted, supervision relates to the teacher's perceptions and plans rather than to the details of teaching performance. In practice this means less focus on the details of content and on the prescription of method, and more on the individual teacher's appreciation of the relationship of ends and means and of his educational planning at classroom level. Teachers need to be helped to specify objectives and to make detailed plans in relation to these. In the final analysis, an effective teacher is one who has the capacity to conceive, plan, develop and implement an educational programme in relation to particular operational objectives.

The trend towards greater teacher freedom was discussed in several of the papers presented. Miss Whitlam claimed that 'We do not take full advantage of our freedom' and this viewpoint is probably shared by many. Mr. Fitzgerald observed that 'The trend in Australia has been to allow the teacher more scope for initiative' and that the 'school has come to enjoy more and more autonomy'. Mr. Williams noted that 'Teachers . . . are seeking more influence over educational decisions and can be expected to continue pressing for a greater share of power'. He suggested that in the transformation of education during the coming decades, 'the most efficient strategy will be rapid professionalization of teachers' and concluded that 'Improving the quality of education depends primarily on improving the competence and status of teachers'.

If the objective of the rapid professionalization of teachers and an associated sharing of power is accepted, planning to this end is urgently required. This is not just a simple matter of 'handing over' without adequate planning of new relationships and new procedures. To go ahead without a well-conceived plan could result in outcomes which neither parents, students, teachers nor administrators anticipate or want.

Mr. Williams noted that 'Much of what is now happening in educational supervision seems to be unplanned and unco-ordinated'. He claimed that principals and teachers could be granted a kind of autonomy 'which could quite easily lead to dispersion of effort and lower productivity'. Mr. Williams concluded that 'the problem is to combine professional autonomy for teachers with the co-ordinated pursuit of educational goals'. Mr. Fitzgerald asked 'whether teachers are competent to make what amounts to final decisions on course content and methods', and observed that 'Their limited professional training gives much cause for doubt'. Mr. Fitzgerald also noted the position of parents where they 'have little recourse should they find the service unsatisfactory'.

Dr. Radford also discussed this matter. He raised the problem of 'those who deny the authority of others but then claim it themselves over those in no position to oppose it, or to question it, or to remove themselves from its effects'. He stressed the danger of teachers 'setting themselves up as sole arbiters of what is good for others', and pointed out that 'Neither have we a right to autonomy in our methods, our curriculum, our organization, our evaluation, whether by class, or school, or system, save by direct delegation constantly renewed by those whose needs are served by our activities'. To plan or to proceed otherwise, he described as 'a travesty of the true role of the professional teacher'. I do not doubt Dr. Radford's deliberate purpose in stating this forcefully. It is a basic issue to be considered concerning school and teacher autonomy and freedom, as these are always relative. To discuss absolute autonomy or absolute freedom is to be unrealistic.

As I have already observed, accountability and co-ordination are necessary components in any organizational setting. Planning regarding teacher freedom and accountability may well be one of the most urgent priorities related to the organization and administration of Australian education. There is need for full exploration and discussion to clarify objectives, opportunities and constraints. In spite of inherent difficulties there is need for planning and for action. It would be regrettable if ad hoc decisions and developments prevailed. Professor Bassett has commented thus:

> One that is especially important is the use of authority to create a stimulating environment for teachers, principals, supervisors, inspectors and others to work in, with ample opportunity and encouragement for them to keep in touch with new ideas and new materials, and be genuinely open to new practices. In such a situation there is

> the possibility of some inefficiency, and an element of indeterminacy; but both are probably inevitable in an enterprise involving such complex relationships. Planning an educational system so that professional development is offered to all who work in it is a bold use of power; but it may well prove to be the best way to promote learning and teaching, and to guarantee progressive renewal of the system. Indeed it may prove to be the only way.

It is obvious that any planning related to the educational programme is the proper concern of the teachers who have to implement it at the operational level. Their involvement with, and their commitment to, a plan are critical factors. Teacher perception and receptivity affects the implementation of a plan quite as much, and perhaps more, than the perception, planning and support of senior administrators. It is not too much to say that just as change rests in a large measure with teachers, so does planning.

Teachers are the most important resource of any educational system. They represent a significant investment. Their salaries are the largest budget item. The educational programme depends upon their attitudes and skills. No amount of stimulation, co-ordination or control can 'lift' the educational programme above the level of teacher competence. As Mr. Williams has noted 'the teacher must therefore remain the principal focus of administrative effort'.

DEVELOPMENT

I was glad to note that Mr. Hayter urged that individual teachers should proceed 'to try out promising ideas without waiting to remake the whole school'. One of the advantages of the North American school system is their capacity to accommodate 'growing edge' teachers and to allow 'lighthouse' schools. Indeed, there is a much greater focus on action research, even though this may relate only to one or two teachers in a particular school. Mass conformity and mass change have tended to be the norm in Australian schools.

During this conference we have had programmes and practices described to us such as team teaching, Sesame Street, teaching machines, independent study, video taping, teacher aides, modular scheduling, information retrieval, and organizing large lecture groups and small discussion groups—to mention only a selection. It is encouraging to know that there is some ferment and action research in Australian education. It is stimulating to know that approaches are being examined and developed with the aim of improving educational practice.

There should be a fair degree of tolerance towards new practices and programmes. It is too easy to play the conservative armchair critic. The important consideration is that these approaches should relate directly to some area of need, that their implementation is planned and that their rationale is critically examined. This brings us back to the question: 'To what end?' I suggest that this question can best be considered at the operational level of the school and classroom, where needs and objectives can be specified within a bounded and comprehensible unit.

Dr. Radford noted both the need and the problem. Claiming that we should do what we can 'to reduce present avoidable inequalities', he stated:

> But as to what to do, we are not so certain. Many of the social action programmes that come so quickly to mind are, of course, unproven. There are some of us who are convinced of the need for such programmes, who though accepting doubts about their efficiency, nonetheless believe that some action must be undertaken and that now.

Later in his paper he observed, 'Faith may move mountains but it must begin by moving little more than a grain of sand'. Provided that it is based on needs, that its rationale is consistent with these needs and that its implementation is planned, a greater amount of action research could help 'lift' Australian educational programmes.

While an approach may be unproven, it may have apparent potential in relation to some specified need; while there may be some doubts related to it, some action in relation to the specified need may be necessary, 'and that now'. It is the role of the professional teacher to consider needs and objectives, to plan, to decide and to act to improve educational practice. Cyr of Columbia University, once observed that if we always waited for the optimum moment or for the final proof, we would never make a decision or a move in our lives, even though commonsense indicated that decision and action were necessary and that there were some promising avenues to explore.

EDUCATION FOR ADMINISTRATION

Administration sets the conditions for teaching and learning in the schools. In this sense each administrator occupies a key role as his attitudes and performance affect education profoundly. The interest of the Kellogg Foundation in educational administration in North America resulted from their awareness of the impact of administrative behaviour on the school. The administrative role can relate to adaptation and leadership. An alternative is limited service and maintenance of the existing structure, but this is a role which many Australian administrators would consider too limiting for their personal task satisfaction.

In his book *Administration and Policy Making in Education,* Walton described the administrator as the 'safe, prudent, practical man who exemplifies stability'. He argued that the administrator is not a determiner of policy, but that he 'tends to conform to the established purposes of the organization of which he is part'. The aspiring administrator should appreciate the message contained in Walton's assertion that administrators are not remembered as administrators, but rather as professionals—academics, engineers, scientists or teachers. Is the administrative function so concerned with stability and the survival of the organization that this creates 'a sterile passivity'? The question which Walton raises may well trouble those Australian administrators who do not dismiss the implications too lightly.

In Australia there has been no tradition related either to education for administration or to qualifications in educational administration. In 1963 Dr. Cunningham and Dr. Radford observed that it was 'not uncommon to encounter scepticism about the possibility or need for training administrators' and noted that 'one even meets hostility . . . to the idea that certain people should be assisted in learning how to "manage" others'. Whether the latter point relates to a stereotype or to reality I leave an open question. Dr. Cunningham and Dr. Radford supported the study of educational administration and recommended possible lines of development.

Last year, when preparing a paper related to the study of educational administration in Australia, I surveyed the sixteen universities and the sixteen colleges of advanced education listed in *Education News*. I also surveyed the six State Education Departments. I found that eight of the sixteen universities were offering courses in educational administration, and that by 1975 it was possible that twelve of these same universities would be doing so. Two of the sixteen colleges of advanced education were offering courses and two more planned to do so in the near future. All of the six State Education Departments were conducting in-service courses. The overall impression was that there had been strong growth during the 'sixties and that this could be expected to continue into the 'seventies.

There is expanding interest in the study of educational administration in Australia. The issue for the coming decade may not be one of quantity; I believe that a considerable number of students will flow to courses. Rather the issue may be one of programme quality and relevance within the Australian context; this is a problem which merits the fullest consideration.

Professor Walker and Mr. Thomas have discussed education for administration. I agree with their rejection of the 'how to do it' approach, and their focus on the importance of concepts derived from the social sciences.

This is not to deny the importance and relevance of practical courses. It is to deny that there are five, or six, or seven rules or steps, which, if applied in the given sequence, result in good morale, supervision, communication, or so on. It does highlight the point of view that an understanding of concepts related to authority, power, responsibility, work satisfaction, leadership, informal organization, and so on, can be a valuable component of education for administration. It is not so much an either/or choice, but a need to place various elements in relationship.

The importance of organizational theory in illuminating the process and context of administration, and in assisting the administrator better to perceive and to comprehend problems and issues, should not be denied. The situational nature of administration always exists, and the problem of generalizing in applying organizational theory is soon apparent. However, when I consider the alternative approach, I do not feel that these difficulties should divert attention from the need to base educational administration in the social sciences. In the United Kingdom, Peston, a professor of economics at London University, has commented thus:

> Educational administration has for too long lacked a firm foundation of social science, and has proceeded on a basis of hypotheses tested at best by common experience rather than by serious research.

In the United States, three leading professors have commented thus:

> There are those who argue that knowledge of organizational and administrative theory and research is a burden rather than a help to the practising administrator, and those who assert that the practice of administration must be founded on theoretical understanding and research however imperfect these may be, or it will be founded on myth, emotion, and unquestioned recipe.

Professor Walker and Mr. Thomas have pointed to the need for one or two-year programmes for non-graduate administrators. They suggested that the colleges of advanced education and the teachers' colleges might be able to provide these programmes. Certainly, the teaching of educational administration needs to go forward on a broader base that the universities can provide.

A major thrust in providing courses for educational administrators must come inside the education departments. As major employers of educational manpower, and having interest in the professional development and competence of their personnel, each department is concerned with administrative behaviour at all levels of the system. While other organizations and institutions may assist in educating administrative personnel, a major task rests with each department. Professor Walker and Mr. Thomas discussed the difficulties and weaknesses in a situation where a department is too dominant in training its own personnel. The 'closed shop' is well known in Australian education and there is a need to widen contacts and experiences in every way possible. It is unfortunate that more use has not been made of courses such as those offered by the Australian Administrative Staff College at Mount Eliza. Dr. Cunningham and Dr. Radford recommended this in 1963 and I pointed to the possibilities again in 1969. When compared with business, industry and other government departments, the participation of educators has been surprisingly small.

There are several contributions that the Australian universities can make. Obviously there is a need to extend the research and publication base to increase the resource materials available for the study of educational administration in Australia. It is also important that a growing number of good level graduates who have studied educational administration at higher degree level come from the universities to assist in educating for administration in the colleges and the state departments. The alternative will be too heavy a reliance on personnel who are limited in their knowledge and reading base.

Fortunately, the departments already employ officers who hold doctoral and masters' degrees in educational administration. Fortunately also, the universities are graduating increasing numbers of higher degree students who have completed courses in this area. For example, in March 1971 of the 49 students at Sydney University who completed pass and honours level Master of Education and Master of Arts degrees, 22 (or 45 per cent) had included graduate study in educational administration. Further, of the 400 students currently studying for masters' degrees, almost 100 were studying educational administration this year, and by the time all of these students complete full degree requirements, we may expect that at least

50 per cent will have studied in this area. Of particular importance will be the honours level masters' and doctoral graduates who give particular attention to the study of administration.

While I do not wish to overstate the position, considering the total of the on-going programmes of the Australian universities, I feel that a promising start has been made.

FINAL COMMENT

The American Association of School Administrators has defined administration as:

> The total of the processes through which appropriate human and material resources are made available and made effective for accomplishing the purpose of an enterprise.

Planning is one of the processes involved. It is necessary not only to plan to make resources available but also to plan to make these resources effective. The theme of this conference has been Planning for Effective Education, and this corresponds well with the above definition.

Since 1945, growth in Australian education has necessitated substantial administrative efforts to provide the quantity of human and material resources required. Evidence of the scope of the problem has been, is, and will be, constantly before us. The challenge is more than this. In preparing sets of decisions for future action, considerations of quality as well as of quantity arise. Planning for Effective Education is imperative; students and teachers in schools are a proper focus, and the clarification of objectives a primary need. I remind you that Dr. Radford in commencing his presidential address, deliberately began with people and placed planning last. I conclude by reminding you of his statement that we should not forget 'that at the heart of every worthwhile policy and every effective plan stand the persons for whose good they are intended'.

THE USE OF MATHEMATICAL MODELS AS AN AID TO EFFECTIVE PLANNING IN EDUCATION

H. W. S. PHILP, M.A., PH.D., F.B.PS.S., F.A.PS.S., F.A.C.E.

School of Education, Macquarie University, Sydney

AND

J. N. JOHNSTONE, B.SC., M.A.C.E.

Senior Tutor, Macquarie University, Sydney

Over the past ten to fifteen years, attempts have been made within various research institutes to develop mathematical models to help in educational planning. Recognition of the potential of models as planning tools has grown enormously over this period. In a very brief survey during 1969 of twenty member countries, the O.E.C.D. found 123 mathematical planning models with a status of either 'finished' or 'in progress'—and not all educational planning models within each country were listed. This emphasis reflects a combination of faith and despair—despair in the effectiveness of current methods of planning, and faith in the mystery and magic of computer aided mathematics. Whether the faith is justified is a moot point: certainly the models can do no worse than the by guess and by God techniques currently employed.

The purpose of this paper is to describe the principal types of models which are most in use; to demonstrate how they may be applied to the Australian situation and to indicate the direction of current research.

Such models can, for purposes of discussion, be classified into three broad groups which overlap to some extent. These three broad categories are:

(a) Models related to one or more specific aspects of an education system. We will refer to these as 'ad hoc' models since they are marginally concerned with analysis or prediction to help in the solution of a specific problem or set of problems.

(b) Models related to description, analysis and/or prediction of the features of an entire education system or a significant part of it. These we designate 'education system' models.

(c) Models which attempt to relate the education system to the socio-economic system. As a rule they are concerned with manpower needs, both in terms of numbers and skills. Our shorthand reference for them is 'manpower related' models, or, to indicate their coverage, 'comprehensive externally-linked' models.

The first category are those which have a very specific and limited purpose and which have been developed to assist planning within one particular institution or within a set of institutions with common and inter-related goals or to assist in planning as part of a total system (e.g., teacher numbers). In such situations, data is easier to collect and less complex in scope; external influences cause less variation in forecasts than when considering a whole system or an economy.

Gani's 1963 study is typical of efforts in this domain. He tried to estimate total enrolments in Australian universities and also the total number of degrees to be awarded in the future. His task was made difficult because of the rapidly changing number of 'first enrolment' type students.

He begins by describing the general and basic pattern of seven years which a particular cohort could follow—three years for a bachelor's degree at pass level, an extra or fourth year for the honours award, a fifth year for a master's degree and then two years for a doctorate. Gani looks at the transition proportions between each level and the numbers repeating. From this he develops a system of simple equations such as

$$S_{it} = \sum_{j=0}^{\infty} Q_i^{(j)} N_{t-j}$$

where S_{it} = number of students at the ith level in year t
$Q_i^{(j)}$ = proportion of the initial cohort enrolling at level i after j years
N_{t-j} = number in initial cohort on entry j years ago.

His system of equations is easily expressed in matrix form and this helps development as well as general expression.

Final results are calculated for a period of six years and compared with the actual numbers of bachelors' degrees awarded at pass and honours levels. The largest error is 7.2 per cent (estimated 3,876, actual 3,615) while the smallest is 0.8 per cent (estimated 3,048, actual 3,025). Errors tended to be those of over-estimation. To reduce these, however, the model could be refined and Gani suggests that this would not be a difficult task.

There have been many attempts along similar lines in the development of mathematical models within one particular institution. Keeney, Koenig and Zemach (1969) deal with this feature and its accompanying advantages in general terms. Judy (1969) describes the CAMPUS model of the University of Toronto which attempts to interrelate all aspects of that university. In Australia, Macquarie University is one institution at present developing a model to forecast enrolments, staff requirements and total costs.

Another example of such models with a limited perspective is provided in the Report of the 'Scott Committee' which investigated class sizes and teaching loads in government secondary schools in New South Wales. The committee used a draft mathematical model to consider the various factors influencing class size. This model we would deem 'ad hoc' because of its focus on only one particular aspect of the education system.

The model was

$$C = \frac{E \times K}{M \times T}$$

where C = average class size
E = number of children in a form to be taught a particular subject
K = average number of time units of instruction received by each pupil
M = average number of time units of instruction given by each teacher
T = number of available teachers

The model was used by the committee to investigate which variables could be manipulated 'in order to achieve smaller classes' (p.56). It was not used to forecast class sizes in the future, although it could very well have been used for this purpose. It illustrates well both the power and the shortcomings of models of its type: for example, if total enrolments rise, then in order to maintain class sizes constant, the alternatives are to increase (T) the number of teachers, increase (M) the number of hours taught by each teacher or decrease (K) the number of hours of instruction for each child. It will be recalled that early in 1971, to meet just such a problem, where T was constant and E rising, the New South Wales Department of Education proposed first to increase M and then, after discussion with teachers, to decrease K. Moreover, by substituting exact values, which were known, for C, T, E, it was relatively easy to calculate a series of possible values for M and K.

This is the essential strength of ad hoc models: they are easy to use and good data are usually available. The weakness is also apparent—the effects of and on other parts of the system cannot readily be seen or measured. In this example, for instance, there is on the one hand a cost restriction if the decision is to increase M—teachers must be paid for extra work and probably a building restriction also, to assume but two effects. Similarly, a decrease in K may have an effect on output, in terms of quality. More generally, an increase in T—with which the committee concerned itself—has implications for teacher education, and for the balance of university enrolments, and these in turn have costing and building implications.

'Ad hoc' models are obviously those most commonly in use and education ministries and departments the world over have used them for centuries—without, as a rule, dignifying them with the title of 'model'. Their severe limitations have been too apparent to us all, not least to those who use them, and it is largely for this reason that the impetus has been given to the investigation of models of broader scope. Further stimulus has been given by the relative success of econometric models[1] for the analysis, description and prediction of the economic system.

The second category of models are those restricted to the education sector. These offer a complete description of the education sector by encompassing all levels of education as well as the many different facets, e.g., student stocks and flows, teacher supply, costs, building requirements and so on.

It is in this area that most development has taken place. Some of the work has been quite promising, but so far no model has achieved even the descriptive success that some of the econometric models have.

The work has almost exclusively followed one of two approaches. The main approach is to estimate enrolments by focussing on the proportions of students flowing from one level of education to the next. The other approach is based on trends of the total numbers of students enrolled at each level, year by year.

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[1] See, for example, the model for Gross State Product by L'Esperance, Nestel and Fromm (1969) or the model describing the U.S. Textile Industry by Naylor, Wallace and Sasser (1967).

Perhaps the most promising amongst these education sector models is the Markov chain model. Thonstad (1969), for example, used such a model on the Norwegian system.

The theory underlying the model is as follows:

$$\text{Let } C = \begin{matrix} C_{11} & C_{12} & \ldots\ldots & C_{1n} \\ C_{21} & C_{22} & \ldots\ldots & C_{2n} \\ \ldots & \ldots & \ldots\ldots & \ldots \\ C_{m1} & C_{m2} & \ldots\ldots & C_{mn} \end{matrix}$$

be a matrix of transition proportions where

C_{ij} = proportion of students moving from grade i to grade j in one time period.

This is not an alternative formulation of an age-grade table. The C matrix focusses on the proportions who move to (or remain in) various grades rather than on the stocks of students who are enrolled in those grades.

Now probability theory shows that if this C matrix is raised to the nth power, i.e. C^n, then the general element $C_{ij}^{(n)}$ represents the proportion of students moving from grade i to grade j in n time periods (i.e. n years).

With a modification to allow forecasting of enrolments, this Markov chain model was applied to N.S.W. Government Primary schools for the period 1947-1961. Two estimates of transition proportions had to be calculated because N.S.W. data concerning flows is not available.

The first method—to be termed method A—calculates the proportion by taking the average number of students in a given grade in one year as a ratio of the students in the next lower grade in the previous year.

The second method—method B—is more complex. It takes a cohort of pupils in a given grade and looks at their age distribution. At the same time, it examines the age distribution of children who are one year older than those in that grade over all grades but in the following year. Comparing these two distributions, a transition proportion can be estimated by calculating the number of pupils of various ages who move from grade to grade—or who repeat.

Two matrices will now be presented. Both apply to boys for grades 1 to 6. They are referred to by the letter appropriate to their method of calculation.

Transition Matrix for Primary Boys—Method A

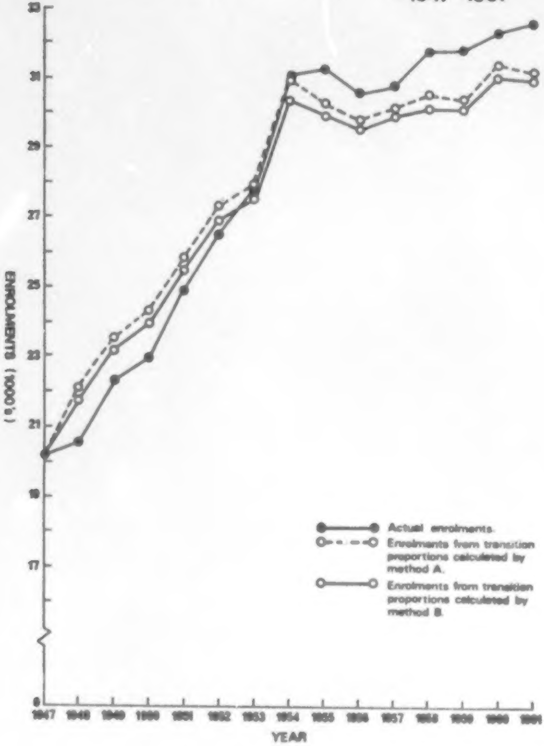
0	.8394	0	0	0	0
0	0	.9805	0	0	0
0	0	0	.9928	0	0
0	0	0	0	.9865	0
0	0	0	0	0	.9858
0	0	0	0	0	0

Transition Matrix for Primary Boys—Method B

.2377	.7593	0	0	0	0
0	.0858	.8929	0	0	0
0	0	.0792	.9175	0	0
0	0	0	.0672	.9234	0
0	0	0	0	.0674	.9144
0	0	0	0	0	.0866

Diagrams 1 and 2 on the following pages are included to show the comparisons between the two estimates and the actual enrolments for grades 2 and 6 respectively.

Diagram 1. N.S.W. Primary Enrolments - grade 2 boys - 1947-1961



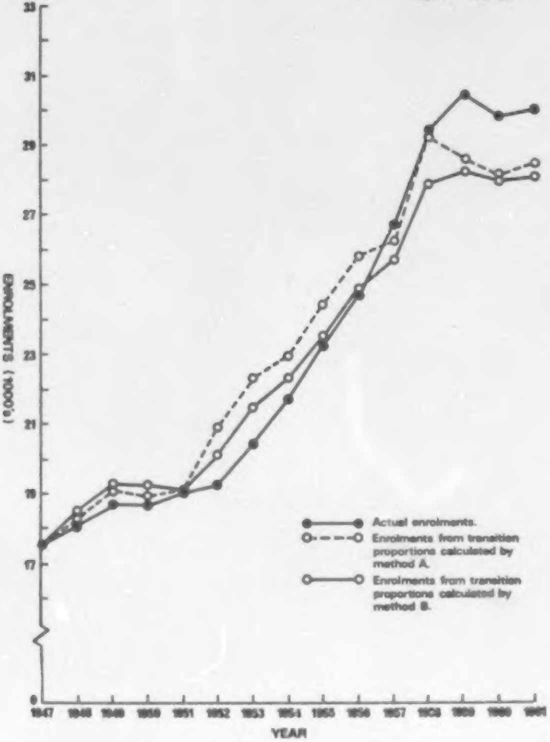


Diagram 2. **N.S.W. Primary Enrolments-grade 6 boys -1947-1961**

Two features stand out in each of these diagrams.

Firstly there is reasonable agreement between the two sets of forecasts and the actual enrolments. The actual-forecast agreement is promising but the forecast A-forecast B agreement is somewhat surprising—especially considering the differences in the two transition matrices above. On analysis (see Johnstone, 1971), it appears as if the data, rather than the method are working to achieve this agreement. A similar result would probably not have been obtained if total enrolments in consecutive grades were rather more unequal than they are in N.S.W. Government Primary schools.

Secondly, the predicted values are higher than the actual values for the first half of the time periods and lower for the second half. This is because the values in the transition matrices are based on average yearly rates and it does appear that the promotion rates from which the averages in the matrices were calculated are increasing. However, this trend cannot be positively identified; nor, if it could have been identified, could it be properly incorporated into the Markov Chain Model.

Models of this kind can be useful to educational administrators in planning the development of their systems within given financial restrictions and known social demands. However, from a broader perspective, they do not enable the government in general to plan social and economic development in terms of the production of manpower with the appropriate range of skills and knowledge and in the desired proportions. For this reason attempts have been made to produce models which have this all-encompassing aim. These models comprise the third category—the 'comprehensive externally-linked models'. They attempt to link economic planning with both manpower planning for the total workforce and planning in the education sector. Through this total coverage, their developers hope to account for the inter-relatedness which necessarily binds these sectors together in reality.

One such model is the Tinbergen-Bos-Correa model. The original model was developed by Professor Jan Tinbergen and Hector Correa in 1962 at the Netherlands School of Economics (see Correa and Tinbergen, 1962). It was later modified by Tinbergen and Hendricus C. Bos, a Research Fellow at the School (see OECD, 1965). Applications of the model have so far been made to Greece, Spain and Turkey (see OECD, 1965) and to Italy (Correa, 1969).

The model is basically of the input-output type. It aggregates all economic activity together. It encompasses the educational sector through considering both second level and third level education as separate entities; primary education, because it is assumed to be the only compulsory education, is not included. Direct relationships are assumed by the model between the total future volume of production in a country and the number of persons with second and third level education in the workforce. From the educational viewpoint, the importance of the model lies in how well it predicts enrolments in second and third level education.

The model consists of six linear, non-regression type equations. There is one exogenous[1] variable and six endogenous[1] variables. The exogenous variable is the total aggregated production and is represented by the symbol v.

The endogenous variables[2] are:

n^2 — number of students in second level education
n^3 — number of students in third level education
N^2 — the total number of people in the workforce with second level education
N^3 — the total number of people in the workforce with third level education
m^2 — those who entered the second level workforce within the present time period
m^3 — those who entered the third level workforce within the present time period

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[1] An exogenous variable is one whose behaviour is not influenced by the model being discussed. Its behaviour can be regarded as having an independent influence on the model.
An endogenous variable is one whose behaviour is being explained by the model. This explanation may be in terms of a combination of exogenous variables and other variables endogenous to the model.

[2] The superscripts are not powers but educational level indices.

The first equation of the model imposes the restriction that people with no more than second level education can be used exclusively for production work. It also requires that this labour force must develop proportionately with the volume of production in the corresponding time period.

Symbolically the equation is expressed:

$$N^2_t = \gamma^2 v_t \qquad (1)$$

(γ^2 is a multiplicative constant; t refers to the time period t)

The second equation is

$$N^2_t = (1 - \lambda^2)N^2_{t-1} + m^2_t \qquad (2)$$

And the third equation is

$$N^3_t = (1 - \lambda^3)N^3_{t-1} + m^3_t \qquad (3)$$

(λ^2 and λ^3 are attrition rates for the second and third level work forces respectively)

These two equations show that the number in either the second or the third level workforce is equal to the number in that force in the previous time period, corrected for attrition, plus those who have joined the force during the present time period.

The labour force which has been added is summarized by the fourth equation:

$$m^2_t = n^2_{t-1} - n^3_t \qquad (4)$$

This shows that those who enter the second level workforce during this period (t) are those who were in second level education during the last time period but who did not proceed to third level education.

The fifth equation of the model is:

$$m^3_t = n^3_{t-1} \qquad (5)$$

and this simply expresses the observation that those who enter the third level workforce during the present time period were all third level education students in the previous time period.

The final equation relates to the third level workforce:

$$N^3_t = \gamma^3 v_t + \pi^2 n^2_t + \pi^3 n^3_t \qquad (6)$$

(γ^3 is a multiplicative constant)

The number in this force is proportional to both the total national production as well as to those active in both second and third level education (π^2 and π^3 are teacher-pupil ratios).

Apart from the obvious advantage of providing a framework for interrelating education system, the workforce and economic growth, this model has two principal advantages.

Firstly, the Tinbergen model allows provision for the very necessary time lags. During these, graduations from either the second or third level of the education system can accumulate. For example, increases in the third level workforce must await increased enrolment in third level education which in turn depends heavily on increases in second level enrolments. Hence the model reproduces the hierarchy of reality and does not allow possible external forces (for example transition from one workforce to another) to influence or dominate the natural flow.

Secondly, the model permits the simultaneous calculation of enrolments at each level as well as the number of teachers needed at that level during the same time period. This is a particularly significant advantage. Some models, for example, determine the enrolments required for necessary development during a particular period independently of the teacher numbers. Then, when teacher numbers are calculated, these increase the calculated enrolments during the previous period and so the calculations must be altered.

However, as would be expected with such a simple structure, this model has several disadvantages—quite apart from the over-simplification inherent in its basic form.

The main problem stems from the assumption of the direct and significant relationship between the volume of national production (or the level of national income) and the educational structure of the labour force. Education-output ratios are far from stable and this in itself raises a difficulty. Causality is not implied between the two factors—simply a relationship. But the model assumes that the education structure affects the volume of production whereas, in actual fact, the situation could quite easily be the reverse.

A second problem is that the societal demand for increased educational opportunity is not provided for. The only criteria for enrolment is that determined by the economic needs of the country during that particular time period. Although societal demands cannot be ignored by the planner, the Tinbergen model prevents such a provision being made. Only the sufficient numbers necessary to attain the desired rate of economic growth are allowed to enrol.

A third problem is that the model does not differentiate type of education needed—simply the level. At the third level for example, it does not separate technical education from teacher education, nor the training of engineers from the training of scientists. Obviously type of education is a very real factor to consider in determining future economic growth. A surplus in one field and a deficit in another within the same level can be just as damaging as a gross imbalance between the second and third level workforces.

The Tinbergen model will now be applied to Australia during the period 1954 to 1966. This involves both the calculation of the values the endogenous variables should have taken in 1954 in order to attain a given rate of economic growth as well as what their values should have been in subsequent time periods until 1966. It is assumed that all variables will grow so as to be parallel to one another, each according to the path

$$Z = Z_o \Omega^t \qquad (7)$$

where $Z =$ any of the variables in the model

$\Omega =$ desired rate of economic growth in one time period

The length of the time periods will be taken as four years. During one period, according to Tinbergen, all those individuals who are in either n^1 or m^1 will move to their next state.

The following definitions are necessary for this application:

Third level workforce	(N^3)	: all those in the workforce who hold university degrees plus teachers at the primary and secondary levels and at universities
Second level workforce	(N^2)	: workers not included at the third level
Third level education	(n^3)	: full-time undergraduate students[1]
Second level education	(n^2)	: secondary education

The desired rate of economic growth will be taken as 19 per cent per four-year period. Australia in fact just exceeded this growth rate over the interval being considered.

The values chosen for the coefficients are:

$\lambda^2 = 0.056 \qquad \pi^2 = 0.05 \qquad \gamma^2 = 0.641$

$\lambda^3 = 0.056 \qquad \pi^3 = 0.11 \qquad \gamma^3$ [illegible] 0.011

By substituting these values into equations 1 to 6, the following initial conditions are found:

$N_o^2 = 0.641 v_o$; $N_o^3 = 0.0198 v_o$; $n_o^2 = 0.1635 v_o$; $n_o^3 = 0.0049 v_o$;

$m_o^2 = 0.1325 v_o$; $m_o^3 = 0.0041 v_o$

Each variable is now expressed in terms of the 1954 Gross National Product (i.e. v_t for $t = o$, 1954). The values they should now take in the initial time period if a balanced growth path is to be attained can now be calculated. Subsequent values are calculated by letting $\Omega = 1.19$ in equation 7 and applying that equation to each of the initial conditions. The values for the first three time periods are given in table 1.

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[1] Almost all other university students would be included in the workforce statistics.

TABLE 1. *The basic Tinbergen model for balanced growth.*

Variable	*1954*		*1958*	*1962*	*1966*	
	Actual	Estimated	Estimated	Estimated	Actual	Estimated
v	5586.0	5586.0	6647.3	7910.3	9388.0	9413.3
N^2	3582.9	3580.6	4260.9	5070.5	4674.2	6033.0
N^3	119.1	110.6	113.6	156.6	182.8	186.4
n^2	328.9	913.3	1086.8	1293.3	800.8	1539.1
n^3	21.2	27.4	32.6	38.8	56.0	46.2
m^2	n.a.	740.1	880.7	1048.1	n.a.	1247.2
m^3	n.a.	22.9	27.3	32.4	n.a.	38.6

n.a. = not available

G.N.P. in millions of £ (1959-60 prices); population in '000s

Sources: v—Vernon Report, p.465; 1968 Yearbook of the Commonwealth of Australia

N^2, N^3—calculated from 1954, 1966 Census Reports

n^2—Schools, 1954, 1966

n^3—University Statistics 1954, 1966

A number of features are to be noted from this table. Firstly, the initial conditions have not been met. There were many more workers in the third level workforce than were required and less than half the desirable number of second level school enrolments. From the actual 1954 values and given constant conditions, Tinbergen would not consider it possible to achieve a 19 per cent growth over consecutive four-year periods.

These discrepancies are magnified in the third time period—1966. The four comparable estimated values in that period are very different from their actual counterparts—only the third level workforce showed a close approximation to its actual value. However, the number in the second level force was very different from the calculated number. This would be attributable to increased productivity of workers, especially at the second level. (See for example, the Vernon Report, p.548.) There are similar discrepancies in the education system. Estimated enrolments in the secondary schools reached impossible values—there were only 1,063,554 children aged 12-16 in 1966. However, with third level education the reverse occurred with much smaller enrolments being estimated than actually were observed.

The table demonstrates that it is the manpower stocks and not the education system which is of central importance to the Tinbergen model. The constancy assumption underlying the technical coefficients intimately ties together the G.N.P. and the manpower stocks. Hence for the economy to expand at a given rate, the stock of manpower must manifest a parallel growth.

The source of new manpower to fill both the number of new positions and to replace those workers who die or retire during the time period must come from the education system. So the number of enrolments in one time period is automatically determined by the size of the work force in the next period, and this is an obvious nonsense. This is not the direction in which the emphasis should lie—particularly if education is a universal goal or if education is viewed as a consumption and not only as an investment. This focus of the model is shown very clearly when, for example, N^3_t and n^3_t are compared with N^3_{t+1} (for any $t = 0, 1, 2$).

The alternative formulation Tinbergen could have used was to focus upon the education sector and determine from there the likely number of entrants to the workforce. He could then estimate the likely rate of economic growth.

In an attempt to obtain better estimates of the initial values from the Tinbergen model, two modifications were made. Firstly, the model was complicated so as to allow drop-out from the education system before graduation; secondly, the time period for each cycle was shortened from four years to one year. The results of both modifications are presented in table 2.

TABLE 2. *Initial (1954) conditions for the modified model.*

Variable	*Actual*	*Basic model*	*Model modified to allow dropout*	*Model with one-year period*
v	5586.0	5586.0	5586.0	5586.0
N^2	3582.9	3580.6	3580.6	3580.6
N^3	119.1	110.6	135.2	107.8
n^2	328.9	913.3	1363.5	863.0
n^3	21.2	27.4	55.9	36.9
m^2	n.a.	740.1	740.1	198.9

Clearly these modifications do not allow the Tinbergen model to fit 1954 data for Australia in a way which would indicate a future growth rate of approximately 4.4 per cent per annum. But as this growth rate was achieved, the validity of the model must be seriously questioned. Similar objections may be shown to be relevant to all models of this character so far developed.

It is clear, both from our analysis and from those conducted overseas, that mathematical models have great potential value for educational planning: it is equally clear that none of those so far developed, with the possible exception of some of the small scale, specific purpose models, has real use in Australian conditions. On the other hand the data gathered here, although far from perfect and not always effectively collated, are to a great extent more comprehensive and more reliable than the data which have been used overseas.

The work we have so far completed at Macquarie has tended to demonstrate the weaknesses of current models. Research is in progress on two new approaches. The first is in the Tinbergen-Bos-Correa tradition: it is concerned with education and manpower. The second is closer to the Thonstad type in its intention: it attempts to find a series of relationships which will permit the analysis, description and prediction of the total education system or significant sections of it. In the first case the approach is through linear programming; in the second it is through regression theory.

At this stage it is too early to forecast success, but we are convinced that given the complexity of modern education systems and the even greater complexity of the relationship of education to the socio-economic system, the effort must be made. Ad hoc planning, like ad hoc models, does not serve us well: we need a comprehensive plan for education—we hope that a comprehensive model can be developed which will assist in this planning.

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